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"Everyone wants total access, but there has to be a balance between ease of operation and reasonable control."

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UPDATE

As hi, sh, so. Accountants recently surveyed personnel executives from 100 Fortune 1,000 companies, asking which foreign language will be the most important for succeeding in business during the next 20 years. The top choice (44%) was Spanish, ostensibly for dealing with the burgeoning U.S. Hispanic population. A close second was Japanese (33%), followed by French (8%), Chinese (6%), German (5%) and Russian (1%). But, like if they spoke with like some U.S. school kids, like they'd like find that like proficiency in like English might be like a wicked awesome cool idea, too.



It's glitchy, but does hypertext have substance? Page 107.



Patrick Sweeney at Fidelity Bank bucks banking's reputation for poor service with a system that caters to customer needs. Page 91.

EXECUTIVE BRIEFING

■ Outsourcing continues to make news as First Tennessee National Corp. taps IBM to run its back-office data centers for the next 10 years. The contract calls for IBM, despite its successful OEM relationship with Stratus, to run First Tennessee's Tandem transaction processing CPUs as well as its 3090. Page 1. In another first, IBM may be asked to serve as DEC's subcontractor when Kodak hires DEC later this year to manage its worldwide telecommunications. The proposed scenario would have IBM managing Kodak's extensive SNA network. Page 8.

■ Computer-integrated manufacturing must step off the factory floor to become an integral part of business strategy, said consultants and IS executives at last week's Autofact show in Detroit. Like many technology innovations, CIM can reach its potential only by crossing corporate functions outside of manufacturing — and that requires intimate participation by the IS department. Page 1.

■ Merrill Lynch is the latest major user to make a strategic move as IS boss DuWayne Peterson coded direct responsibility for three IS divisions to specific Merrill Lynch business units. Peterson retains dotted-line supervision and will continue to oversee policy, strategy and control for the three divisions. Page 8.

■ On-site this week: Fault-tolerance has become the lifeline at Joseph B. Dahlkemper, a catalog showroom chain in New York, Pennsylvania and Ohio. With the Christmas retail bills looming, Dahlkemper's two Stratus systems help both IS and business managers sleep peacefully. Page 29. The busy season has already gotten under way at mail-order greeting card firm Current, Inc., where the transition to Bull's new DPS 9000 mainframe was smooth and hassle-free. Page 27.

■ Overcoming organizational barriers to change is the key for IS to enable new business processes. Pfizer, Rubbermaid, Ford and Manufacturers Hanover provide four case studies of how they did it. Page 79.

■ Retired Prime CEO Joe Henson traded in his golf spikes for wing tips and re-joined the industry as chairman of No. 2 independent systems software maker Legent. Henson, 56, will lead Legent in competition against Computer Associates and his own alma mater for 27 years, IBM. Page 143.

■ The stock market turned bullish on program trading as the NYSE moved to guard against wild market gyrations by restricting computer-based index arbitrage. Page 4.

■ Customers are getting more than lip service these days as companies recognize the importance of customer service to business success — even survival. Systems built around tightly

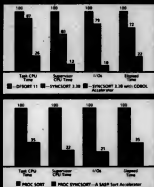
integrated databases are playing a key role in strategies designed to gauge customers' desires and respond to their needs quickly. Page 91.

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■ Hoopla and hype about hypertext obscures real strengths and weaknesses. A growing stream of product announcements adds to hypertext awareness. But there is little clear understanding about what the product is good for and what it can do. Page 107.

■ The terms of "shrink-wrap" licenses for PC software are generally unenforceable, an attorney says. There can't be a contract without an agreement, and there is no agreement to the terms before purchase. However, says attorney, the software, and there is some value to vendors in issuing the licenses. Page 134.

SYNCSORT PRESENTS 3 NEW WAYS TO MAKE SHORT WORK OF LONG JOBS.



Stock in program trading drops

BY JOANNE M. WEXLER
CH WY

Program trading may have reached a point of diminishing returns, as the bearish view of industrial Wall Street clients last week prompted several investment firms to retreat from the suddenly controversial practice of using computers to buy and sell massive blocks of stocks.

In response to the outcry, the New York Stock Exchange (NYSE) Thursday requested that its member firms voluntarily refrain from program trading for their own accounts and that they also ask their customers to use discretion with the practice. The NYSE also placed limits on its Designated Order Turn-around (DOT) and Super DOT electronic ordering systems to trigger transaction delays of up to 60 minutes.

A wave of opposition to a computer-assisted trading strategy known as stock-index arbitrage, which takes advantage of fleeting discrepancies between prices in the stock and futures markets, has built steadily since it was pegged by critics as partially responsible for the 190-point plunge in the Dow Jones industrial average Oct. 13.

The ability to capture a brief window of buying/selling opportunity is facilitated by the use of computers, which can be programmed to continually evaluate

various market conditions and automatically generate transactions when a predetermined set of criteria is present.

In the case of index arbitrage, "baskets" of transactions — such as the buying or selling of shares from the entire Standard & Poor's 500 stock index — are bought in either the stock or futures market, whichever is less

expensive, and sold in the more expensive one. While computers may not be entirely to blame for trading activities that upset the market, Robert McDonald, an associate professor of finance at Northwestern University's Kellogg School of Management, said that the quick buying and selling behavior would not exist without

the aid of computers, because most of the monetary opportunities were missed. "If there was a rule that no order got executed until 48 hours after it was placed, I could almost guarantee that the wide fluctuations would not happen," McDonald said.

Some investors have been threatening to boycott securities firms that practice index arbi-

NYSE trading

Program trading has been an up-and-down business on Wall Street



SOURCE: NYSE

trading because they believe that it contributes to more volatility in the market than would otherwise exist, which they conclude can have a negative impact on their investment activities.

The added volatility creates an air of uncertainty and instability that detracts from equity investing," said William V. Ferdinand, senior vice-president and

managing partner of Miller Tabak Hirsch & Co. "Without computers, there would be lots of inefficiencies in the marketplace, because there would be no price information, and insiders would benefit." Market fluctuations have more to do with trading behavior than with computers, Miller said. Some traders, he said, are "trying to scare the market and benefit by waiting until prices drop before buying on the other side."

chief investments officer at Penn Mutual Life Insurance Co.

Before Thursday's NYSE announcement, several securities firms, including Kidder, Peabody & Co., Bear, Stearns & Co., and Morgan Stanley & Co., had already pulled back from index arbitrage for their own accounts, and Merrill Lynch & Co. had announced that it would cease the practice altogether.

Ferdinand said that some of the recent volatility being attributed to index arbitrage is not appropriate. He explained that there is a whole cross-current of conditions at play in the market, including more aggressive selling by institutional investors.

A member of a securities firm who was an early implementer of the index arbitrage strategy said that while index arbitrage is facilitated by the DOT system, the people pushing the buttons — not the system itself — are really to blame for any misuses.

"The information computers provide keeps us honest," said Jeff Miller, managing partner of Miller Tabak Hirsch & Co. "Without computers, there would be lots of inefficiencies in the marketplace, because there would be no price information, and insiders would benefit." Market fluctuations have more to do with trading behavior than with computers, Miller said. Some traders, he said, are "trying to scare the market and benefit by waiting until prices drop before buying on the other side."

CIMS not worth a cent; system revamp planned

BY MICHAEL BETTS
CH WY

WASHINGTON, D.C. — The U.S. Congress last week continued on the Commercial Information Management System (CIMS) to help put a dent in the U.S. trade deficit, but there is unanimous sentiment that the system is virtually worthless.

After 11 years, three different acronyms and \$35 million spent on the export-promotion system, "CIMS is not working," declared Sen. Jay Rockefeller (D-W.Va.) at an oversight hearing last week.

"I've got a tiger by the tail here," said Janet L. Barnes, the new director of CIMS, in an interview last week. Formerly chief information officer at the Pension Benefit Guaranty Corp. (PBGC), she has been at the Commerce Department since Jan. 1, 1980. Barnes has the challenge of turning around a troubled system that has the attention of U.S. senators and Congress. Secretary Robert Mosbacher.

A major problem is that the system, which was developed in

piecemeal fashion, uses three different types of software. "We have three very different environments to manage and maintain. That doesn't make a lot of sense, especially when budgets are tight," Barnes said.

"CIMS is a system with a multitude of problems," testified Susan C. Schwab, the new director general of the U.S. and Foreign Commercial Service. According to Schwab, the problems include cumbersome software,

outdated hardware, old data and faulty communications links, echoing an audit by the U.S. General Accounting Office (GAO).

CIMS is supposed to be a worldwide marketing database management system, full of market research reports and foreign contacts that would help small and medium-size businesses export their products.

A low CIMSmer

However, the GAO audit found that CIMS is not extensively used in many U.S. and foreign posts because data entry is too difficult, data retrieval too slow, and communications with the Wang Laboratories, Inc. VS

minicomputer in Washington, D.C., is often disrupted by line static.

For example, the GAO found that at the Charleston, W.Va., office, it took almost eight hours to retrieve 15 text files from the central database and store them in Wang personal computers; in the Tokyo office, 95% of the CIMS records had not been updated in four years.

Barnes said that the fundamental problem with CIMS is that it has never been built exactly what business mission CIMS was to perform. Some officials wanted an analytical tool for trade counselors, whereas others wanted to give businesses direct access to the database.

On federal agenda: Items mired in red tape

WASHINGTON, D.C. — It is usually tough to get a handle on exactly what the white federal bureaucracy is doing at any given time. However, last week, the U.S. government published its semiannual list of the regulations creeping through the bureaucratic pipeline at 55 agencies.

In the computer field, for example, the Federal Register's Regulatory Agenda lists the fol-

lowing major proceedings: • Sometime this month, the Food and Drug Administration plans to issue its final policy on how it will regulate computerized medical devices and diagnostic equipment.

• By the end of the year, the Federal Communications Commission plans to revisit the controversial topics of deregulating AT&T and extending "price cap" regulation to the local ex-

change carriers. • Next year, the Department of Transportation will conduct a comprehensive review of the regulations governing airline reservation systems.

Also, the Bureau of Export Administration is working on a definition of a supercomputer and believes it has settled on a peak performance of 100 million floating-point operations per second or more.

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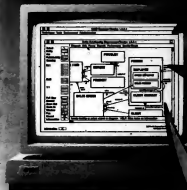
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On-line tax plans raise format fears

BY MITCH BETTS
CSTAFF

Several efficiency-minded state governments are now requiring corporations to send their tax payments electronically, but corporate information systems departments are worried that they will soon be faced with the nightmare of 50 different formats for remittance data.

"A couple [of formats] we can handle. It's the nightmare down the road that we want to prevent," said Dick Drevlow, manager of IS quality improvement at Shell Oil Co. in Houston.

Just in the nick of time, the Federation of Tax Administrators and other groups are working on a standard format for electronic tax payments that they anticipate will be adopted by all of the states and the Internal Revenue Service.

Large-scale electronic payment programs are already under way in Indiana, New Mexico and Idaho. Currently, a corporation that operates in both Indiana and New Mexico, for example, must use different formats for remittance data.

"The cost is more program-time to support those [multiple] formats, at a time when we're trying to improve the productivity of our staff and work on more strategic types of systems," said Drevlow, who is

less than that states have come up with different formats for the 80-character addendum that accompanies the payment and provides taxpayer information.

Recognizing the looming problem, the Federation of Tax

Taxpayers by wire

At least 10 states will require corporations to pay state taxes by electronic funds transfer next year, and many more states are on deck



25-30 states are expected to have EFT programs by 1993

SOURCE: FEDERATION OF TAX ADMINISTRATORS

NOTES: SOURCE: FEDERATION OF TAX ADMINISTRATORS

also chairman of the Petroleum Industry Data Exchange.

The electronic payment itself uses the Cash Concentration or Disbursement Plus Addendum (CCD+) standard developed for the government by the National Automated Clearing House Association (NACHA). The prob-

lem is that states have come up with different formats for the 80-character addendum that accompanies the payment and provides taxpayer information.

Recognizing the looming problem, the Federation of Tax

Administrators of CCD+ said it is an interim standard that can be easily modified to an EDI-compatible standard in the future. Also, an ANSI X12 payments task group has agreed to write a guide for translating ANSI X12 transactions into the CCD+ format.

Robert Barr, manager of information resource services for the South Carolina Tax Commission, said that better handling corporate tax payments will eventually use NACHA's Corporate Trade Exchange (CTX) format, which is compatible with EDI software.

CTX was not selected initially as the tax standard because very few banks support CTX, whereas thousands of banks have adopted CCD+. Barr said.

Several sources expressed relief that the standard is arriving before a crisis hits, but the selection of CCD+ has not pleased the electronic data interchange (EDI) community, which is devoted to the ANSI X12 standard.

Bill Caffero, senior EDI consultant at General Electric Information Services, a unit of General

Electric Co., complained that yet another special version of CCD+ is being created to handle transactions that could be handled by ANSI X12.

However, Caffero conceded that adding one tax format is better than adding 50 formats for each state. "I understand why they did this. They are pressured for time. But like many of the things you do for expediency, eventually you have to go back and rework it," he said.

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Internet

FROM PAGE 1

worm. "Many computers connected to Internet have experienced unauthorized system activity... over a period of several months, and that activity is spreading."

An unidentified hacker had surreptitiously substituted the Teletext program — used to establish connections between computers — on several computers with a version that enabled the hacker to record the user name and password of every user logging on to the computer. The hacker was then able to penetrate several other computers using the user names and passwords, CERT said.

CERT was established soon after the Internet worm attack by the U.S. Department of Defense — whose Argonne and MIT labs are among the largest networks on Internet — to help systems managers cope with security breaches.

A spokeswoman for CERT refused to say precisely how many times the group has been called in to help systems managers cope with security problems but acknowledged that CERT is "always involved in what are mostly minor things."

Security on the Internet has been under intense scrutiny since last year's worm attack.

The malicious code was allegedly created by Robert T. Morris Jr., then a 23-year-old computer science graduate student and son of one of the U.S. gov-

ernment's top computer scientists.

Morris, who was suspended from Cornell University following the incident, was indicted in July on a single felony count under the Computer Fraud and Abuse Act of 1986. Last week, a federal magistrate in Syracuse, N.Y., denied motions to dismiss the indictment and set a trial date for Nov. 29.

Poor security practices contributed to the spread of the virus on Internet last year, and those practices are still there," said Eric Schuman, chief of the office of standards and commercial product evaluation at the National Computer Security Center.

The center is a branch of the super-secret National Security Agency that focuses on computer security. "Everyone wants to talk access, but there has to be a balance between ease of operation and reasonable control," he said.

Internet systems managers, especially at universities, hesi-

tate to adopt stricter security measures for fear that their systems will become too unwieldy or difficult for end users, said Eugene Spafford, an assistant professor in the department of computer science at Purdue University.

"The problem with security is not the network itself," Spafford said. "What's needed is a heightened awareness of what security is all about at the individual sites."

In many instances, systems managers also lack the technical skills required to close loopholes in Unix, the predominant operating system run by computers on Internet, said Clifford Stoll, an astronomer and computer security expert at Harvard University's Smithonian Center for Astrophysics.

"Unit desperately needs to be re-examined and rewritten," Stoll said. "There are too many holes in Unix, and it needs to be easier for systems administrators to secure."

It's ba-a-ack: 'No Nukes Worm' haunts Internet

What had been feared came to pass last week with the return of the "No Nukes Worm" on the Decnet Internet, a worldwide network that links computers at government agencies, research centers and other institutions.

For the second time in three weeks, a worm carrying an anticommunist message infiltrated the Decnet-based network, this time penetrating an estimated 300 Digital Equipment Corp. VAX/VMS sites worldwide in only a few hours.

The Decnet Internet is an amalgamation of several national and international wide-area networks, including the National Aeronautics and Space Administration's (NASA) Space Physics Analysis Network (SPAN).

Although the worm did not damage files, it had serious side effects, said Ron Tencati, SPAN security manager at NASA's Space Applications Research in Langham, Md.

"It seems that the only way to combat it will be to inoculate every computer on the network," Tencati said. SPAN's security team has developed a vaccine that it expects will finally exterminate the worm from the network of some 13,000 computers.

"Hopefully, our vaccine will cause the worm to short during its attack," Tencati said. "We stopped seeing reports of the worm on Oct. 20, but last Monday, we saw a new strain of the worm."

Even sites that resist the attack are vulnerable because the worm was designed to repeatedly hammer a system, generating

hundreds of log-in failure messages and consuming large amounts of disk storage space, Tencati said.

The security program is a slightly modified version of a worm that struck some 60 computer systems on the Decnet Internet between Oct. 16 and 20 (CW, Oct. 23). Following that attack, officials at the U.S. Department of Defense-sponsored CERT warned users that the worm had left "serious security holes." CERT also said many copies of the worm had been sent through the network and that "someone could launch this worm into any Decnet-based network."

An unidentified programmer did precisely what CERT predicted: The worm was " tweaked " and sent off again to carry out its mission more efficiently, Tencati said.

The worm was designed to penetrate systems through accounts that had the same user identification and password and through the default Decnet account called Task Object 0. If successful at cracking the password, the worm changed the system banner to display a message that read in part, "Worms Against Nuclear Killers."

NASA officials said they believe the worm was created to protest the Oct. 20 launch of the *Astrosat* space shuttle, which carried a photon-powered probe on its first leg of a mission to Jupiter.

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NEWS SHORTS

Forecast trips Compaq stock

Compaq Computer Corp.'s report that fourth-quarter earnings will be lower than projected sent its stock price into a 16½-point tailspin Thursday. Compaq blamed a slowdown in the U.S. market, limited new-product availability and the uncertainty of the Intel Corp. 80486 chip. Coupled with its earlier discovery of 1486 flaws, the latest news casts a chill on Compaq's badly anticipated 1486-based personal computer premier, slated for today.

Investment firm works on image

The Putnam Companies of Boston last week claimed to be the first financial services firm to install the mainframe version of IBM's image-processing system, Imageplus. Putnam, which said it decided two years ago to pursue a paperless business environment, has 40 workstations and an IBM 3090 Model 200S supporting the image application in its Shareholder Priority Processing Department.

Sun's Lacroute rises at Dynabook

Forster Sun Microsystems, Inc. Executive Vice-President Bernie Lacroute has been named as chairman, CEO and president of Dynabook Technologies, the San Jose, Calif., start-up co-founded by another Sun alumna, Vinod Khosla. Dynabook entered the crowded portable computer field earlier this year with an Intel 80286-based model. Lacroute is also expected to continue with the venture capital firm of Kleiner, Peritz, Caufield & Byers, which is also a major investor in Dynabook.

Treasury seeks to stanch laundering

The U.S. Department of the Treasury last week announced plans to regulate international electronic funds transfer as part of an attack on money-laundering schemes. The agency said it may require banks to keep records of the parties involved in international wire transfers and report suspicious transfers.

Unix venture for Borland

Borland International announced an agreement last week with Mountain View, Calif.-based Hunter Systems Software to port several Borland applications to Unix. Hunter will use its porting system, XDOS CAPS, to develop XDOS versions of Borland's Quattro spreadsheet and Sprint word processor. Borland's DOS-based products will then be compatible with any Unix system running under Hunter Systems's XDOS Translator product, according to the companies.

PC support for AS/400 software

Native Software, Inc., in Richmond, Va., has introduced APC/400, which is said to enable users of IBM Application Systems/400, System/36 or System/38 to move applications to a personal computer. The PC can also be used as a programmer workstation to develop applications before moving them back to the larger systems. Pricing starts at \$2,195 for a single-user development system, with runtime environments available for \$495.

Pacbell does ISDN

Pacbell last week joined the but slowly swelling ranks of regional holding companies that have announced local Integrated Services Digital Network services. Pacbell plans to offer a Central Area ISDN service that will transmit voice, data and video among sites served by the same central office.

EISA Token-Ring premiers

A UK-based bridge Network has unveiled what it claimed is a Token-Ring performance breakthrough with a Smart 16M4/4M Extended Industry Standard Architecture (EISA) node. The product reportedly transmits data at 33M bps/sec., which is the maximum speed of the EISA bus. The same technology will be applied to boost IBM's Micro Channel Architecture bus.

IBM may back up DEC in Kodak telecom deal

BY CLINTON WILDER
ON STAFF

ROCHESTER, N.Y. — IBM as a Digital Equipment Corp. subcontractor? Such a relationship between the industry's two biggest rivals could exist in Eastman Kodak Co.'s telecommunications operation.

Kodak, already the talk of the information systems management community for its outsourcing of IS operations to IBM, is currently negotiating with DEC to take over many of its telecommunications functions [CW, Oct. 30]. Although DEC will be the lead partner, Kodak is considering expanding its current agreement with IBM to have IBM manage the large Systems Network Architecture (SNA) component of its worldwide networks.

Under this scenario, a large number of Kodak telecommunications professionals would become DEC employees, but some of Kodak's SNA specialists would become IBM employees. IBM hired approximately 300 Kodak IS workers when it assumed management of Kodak's Rochester data centers last month.

Dealing with the SNA network in a DEC management environment "was an issue, but we're working with both [vendors], trying to craft a special arrangement," said Alan Chase, a group manager in Kodak's corporate IS organization. "They would not be running into each other's proprietary concepts."

We're trying to maximize everyone's best interests."

SNA supports most of Kodak's core administrative and financial applications as well as an IBM Professional Office System (Profs) electronic mail network that supports more than 10,000 users. DEC's Decnet supports most manufacturing, engineering and research applications.

"Our architecture goal is to have a network that is far more open than either Decnet or SNA," Chase said. "We think having both players, both committed to moving to open architecture, will enhance our ability to get there even quicker."

Kodak's telecommunications partnership with DEC, code-named Telexair, will be for at least five years and possibly as long as 10 — the same duration as the IS partnership with IBM. Chase said the Kodak negotiating team hopes to have an agreement to recommend to Kodak executives by mid-December.

The telecommunications partnership will most probably include a major long-distance carrier — AT&T, MCI Communications Corp. or Sprint Communications Co. Rochester Telephone Corp. will continue as Kodak's vendor of local voice networks and other services.

Kodak is aware that shifting involvement from Kodak to DEC may be a greater cultural change than the move from Kodak to IBM. "Many people have worked for Kodak longer than DEC has been in business," Chase said.

Merrill Lynch disperses IS management

BY DAVID A. LUDLUM
ON STAFF

NEW YORK — Merrill Lynch & Co. last week decentralized the management of three information systems organizations, tying them more closely to the business activities they support.

The three units, which already were dedicated to the business area, had reported directly to DuWayne Peterson, Merrill Lynch's executive vice president for operations, systems and telecommunications.

Peterson continues to oversee policy, strategy and control for those three functions and will exercise "dotted line" supervision of the reassigned units. He also retains direct supervision of

the Global Information Services Group that runs data centers and telecommunications, the revenue-generating Tele-report communications subsidiary and a Management Science unit.

Effective last Tuesday, Merrill Lynch assigned its Global Operations Division to the Capital Markets Group, the trading, investment banking and international finance unit for which it provides technological support.

The company reassigned two other divisions — Financial Services and Field Operations and Systems Support (FOSS) — to the Consumer Market Group. Financial Services, located in Somerset, N.J., provides centralized support for such consumer products as services, FOSS runs systems for the 460 retail branch offices.

In a prepared statement, Peterson said the changes will forge a stronger partnership between the support units and users and allow technology issues to assume a greater role in management of the businesses.

Bank

FROM PAGE 1

increasing willingness to manage multivendor environments in seeking a reputation as a provider of any type of IS services. As part of the contract, IBM will replace terminals in First Tennessee's branches and loan offices with 1,700 IBM Personal System/2s by April 1991.

The move will cost 70 to 90 First Tennessee IS employees their jobs. IBM will hire between 30 and 50 of the 130 First Tennessee operators, communications specialists and technical services professionals that will be affected. IBM and the bank will provide outplacement services to those not retained.

First Tennessee's entire IS function, including a large operation that processes checks for other banks, employs about 900 people. First Tennessee will retain control of its 100 applications developers and the check-processing business.

Lower operations costs and faster implementation of key IS technology motivated the decision to outsource, said John Kelley, First Tennessee's executive vice president and corporate services group manager. With \$6 billion in assets, First Tennessee is the 80th largest commercial bank in the U.S. and second in Tennessee behind Nashville-based First American Corp.

"To compete against larger banks, we either had to become part of a larger bank or find a new partner," Kelley said. "IBM will provide the technology that we need to compete, and they will help us cut costs."

First Tennessee had a five-year plan to replace its teller and loan office terminals with intelligent workstations; Kelley noted that IBM's PS/2 installations will accelerate that change. The contract "will also allow us to spend more time on the strategic part of our business than the actual operating part," he said, echoing many IS executives who have opted for outsourcing.

Kelley said that IBM's contract price, which he did not disclose, offers "substantial" savings over First Tennessee's 10-year projections of IS operations costs, with most of the savings in personnel expense. IBM will also cut costs by removing 2,438 lines from the data center, transferring the processing to the 3090.

First Tennessee will take a one-time charge of \$4 million in the fourth quarter for severance payments, equipment write-downs and negotiating costs.

First Tennessee will not turn over the operation of its First Express business check-processing service.

Outsourcing to IBM is part of First Tennessee's overall bank-lightening effort to hold noninterest expenses at current-year levels in 1990.

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Wang may slash work force again

BY NELL MARGOLIS
CV STAFF

LOWELL, Mass. — Reports late last week that Wang Laboratories, Inc. will announce a 2,500-person work-force cut when company president Richard Miller details the firm's

comeback plans later this week drew an enthusiastic response from those who believe that drastic surgery is required if the company is to survive.

Steve Wendler, an analyst at Gartner Group, Inc. in Stamford, Conn., said the number of layoffs — approximately 10% of

Wang's total work force of some 25,000 — would not surprise him and will not go far enough.

"What's really needed for the financial health of the company is a slimming down to about 20,000," Wendler said. "The trick is how to do that without affecting either the short- or long-

term viability of the company."

The reports will be neither confirmed nor denied until the scheduled Nov. 9 announcement, said a Wang spokeswoman. Wang issued a statement calling a story on the layoffs in a Boston newspaper "both speculative and premature," stating that it did not come from a source within the company.

"Rick Miller has consistently

said both internally and externally that further action was needed," the statement said.

Clement Kichuk Jr., Vice-president of Westport, Conn.-based MIS Marketing Corporation of America, a heavily invested Wang user, said that he expects and hopes that the layoffs rumors are true.

"What is really key to me is their technology," Kichuk said. His company, an approximately \$200 million consulting company and conglomerate, handles the data processing for all of its holdings on Wang computers, using Wang software as well.

"The decision to go with Wang has been an incredibly good one for us; we get our work done with just over 30 people, and I know it would be three or four times that without Wang," Kichuk said. MIS Marketing, he added, is also relying on Wang's promised strides into imaging.

The prospect of further major layoffs at Wang, from which some 5,000 employees have already departed this year, is disconcerting from some points of view, Kichuk admitted. "I can see days coming when we'll call and there won't be anyone there to answer us, or not as soon as we'd like," he said.

The net result, he said, will be worth temporary setbacks. If the predicted layoff happens, "It will send a very important message to the customers: that Wang is doing what it has to do to be there for them in the future."



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Lotus fixes display glitch

CAMBRIDGE, Mass. — Users attempting to run Release 3.0 of Lotus Development Corp.'s 1-2-3 spreadsheet under OS/2 Version 1.2 may find themselves fading to black, courtesy of a minor difference in display drivers between the two versions of OS/2 Standard Edition.

Release 3.0 runs fine on OS/2 Version 1.0. "As I understand it, the screen goes black" when users try to upgrade to OS/2 Version 1.2, said Chuck Sullivan, senior product manager of Release 3.0.

"There was a small change in the internal specifications for the display driver or screen stack size (memory allocation) that was changed. This caused some of our display drivers in Release 3 to not work properly," Sullivan explained. He described the glitch as a routine maintenance problem. "It has never caused data loss or affected any data application," he said.

Lotus will make an update driver disk available this week, free of charge, through its customer purchase centers. Users must call the center to get a disk mailed to them.

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Microvax to tie into Token-Ring

BY MARYFRAN JOHNSON
CWI Staff

ANAHEIM, Calif. — A direct, high-speed connection between Digital Equipment Corp. Microvaxes and IBM computers via Token-Ring interface will be unveiled this week by a third-party vendor.

San Diego-based Simpat Associates, Inc. will reportedly announce its TCI 2000 series of Token-Ring interfaces, hardware and software products at the Dexpo West '89 trade show.

The products reportedly will allow any DEC Microvax to be connected directly to Token-Ring, the increasingly popular IBM networking standard. Until now, DEC has relied on Ethernet as its networking connection, with links to IBM systems only through complicated gateway arrangements.

"This sounds like the first step toward a reasonable solution," said Katherine Barrett, a manager in network consulting at Ernst & Young in Fairfax, Va.

"There's no question that being able to put a VAX on a Token-Ring will make everybody's life simpler."

Each interface in Simpat's

TCI series consists of an intelligent communications front-end processor and software that implements one of the four protocols commonly used in the Token-Ring environment: Logical Link Control (LLC), Transmission Control Protocol/Internet Protocol (TCP/IP), IBM-compatible Netbios and IBM's LU6.2.

Another vendor, Systems Strategies, Inc. in New York, will also announce LU6.2 Token-Ring support to its Ezbridge line of IBM-to-DEC connectivity software. In a marketing agreement between the two companies, Simpat provided its hardware as a platform for Systems Strategies software.

David Terrie, president of Newport Consulting in Scituate, Mass., said, "Token-Ring products [for DEC machines] are not new, but what is different here is the range of protocols being supported directly by the board."

The 2000 series consists of four versions, each handling one of the major software protocols.

The TCP/IP version will require little or no customization by users, said Steve Adams, a Simpat spokesman. The LLC, Netbios and LU 6.2 interfaces, however, are intended for use as development tools by systems integrators, who "will have to do some programming themselves," Adams said.

The first three models — for LLC, TCP/IP and Netbios — are available now in sample quantities, ranging in price from \$7,900 to \$17,150.

Vaxstations head list of DEC debuts

MAYNARD, Mass. — Digital Equipment Corp. will flesh out its Vaxstation line with the introduction of two general-purpose models this week, along with a raft of enhanced software and networking products for technical and commercial markets.

Sources close to the company report that 16 products — a general aimed at desktop integration in a multitasking environment — will be unveiled at a press conference Tuesday at Boston's World Trade Center.

In a demonstration of new interoperability skills, DEC officials will pass along and print out several files between an Apple Computer, Inc. Macintosh and DEC machines from both the Vaxstation line and the reduced instruction set computing-based "open systems" Decstation line.

Also making its debut will be three RT (real-time) Vaxstations, one based on the 3300 line and two based on the Vaxstation 3100.



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3Com announces stopgap network measures

BY CHARLES WYN SIMSON
OF STAFF

SAN JOSE, Calif. — Acknowledging that a mature integration of multivendor network operating systems in years away, 3Com Corp. faced impatient customers and announced a slate of interim capabilities last week that will allow them to better develop their own management systems.

Although corporate managers applauded the direction, most expressed impatience with the development of answers for their problems.

3Com issued a statement of intent to

offer a series of network management applications that will give managers a greater degree of information on network functions across multivendor environments. The announcement came at 3Com's Network Systems Forum, a marketing conference held here. The products, elements of the company's Open Management Architecture, are scheduled for delivery by summer 1990.

"Part of the problem is definitely the development of standards and technological hurdles," said Brian Steele, a network systems analyst at Citgo Petroleum Corp. in Tulsa, Okla. But, he added, "There is also a large measure of politics and mar-

keting getting in the way. Until vendors develop a real solution, we will grow a lot of capabilities internally and stay away from proprietary systems."

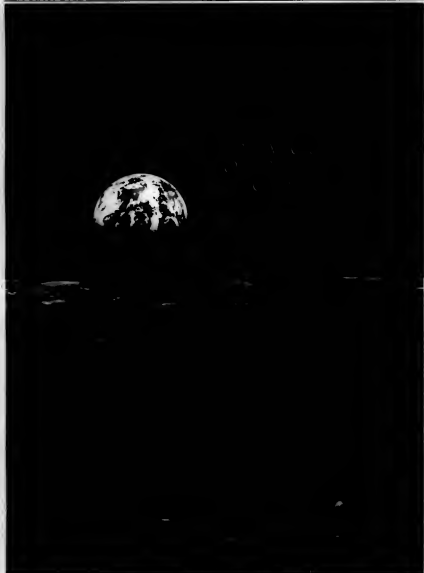
In response to such sentiments, 3Com also announced that it will design and publish application programming interfaces that will allow systems administrators to develop applications for their specific environments. Icon-driven statistical and technical network reporting functions were demonstrated at the forum.

"For most heterogeneous campus LANs, the solutions are the worst possible mess you can imagine," said Steve Spanier, vice-president at Infonetics,

Inc., a Santa Clara, Calif., market research firm that recently completed a study of heterogeneous campus networks. "You will only see more users forced to grow their own."

In addition, the company announced network software allowing Apple Computer, Inc. Macintosh computers to directly access file and print services on a 3+Open LAN Manager network using Apple's Appletalk Filing Protocol and Printer Access Protocol.

Apple users were cautiously optimistic. "They will have to offer a greater comfort level before I move critical applications off of our HP 3000 systems onto a network," said Ed Rogers, MIS operations manager at Adia Personnel Services in Menlo Park, Calif.



Brout route

3Com was not idle on the hardware side of the business last week, demonstrating an Ethernet brouter that, functioning as a router, will direct three major protocols.

Depending on requirements, the BR/2000 can operate as a protocol-transparent bridge; as a brouter supporting Xerox Corp.'s Xerox Network Systems, Transmission Control Protocol/Internet Protocol and Open Systems Interconnect protocols; or as a brouter for routing supported protocols and bridging all others.

The bridging function provides internetworking support for all protocols not configured to be routed. Analysts said this can be an important function for network managers developing internetwork communications between devices using protocols that were not designed to be routed, such as IBM's Netbios and LU6.2 protocols.

Data General boosts revenue

WESTBORO, Mass. — Just as it predicted last month, Data General Corp. last week reported the highest quarterly revenue in the organization's 21-year history for its fourth quarter, which ended Sept. 30.

The firm said strong sales in both the proprietary MV computer line and the fledgling Unix-based Avion line boosted revenue to \$357.1 million, up 4.6% from last year's fourth-quarter figure.

An \$64.1 million loss for the quarter, including an \$80 million restructuring charge, compared with a \$49.5 million loss in last year's fourth quarter, including a \$48.7 million restructuring charge.

"We also have not seen the last of Data General layoffs," said Chief Executive Officer and President Edson de Castro. "We've got a lot more to do. Getting efficient requires a lot of steps, and we're going to keep taking those steps."

DG is encouraged by the fact that some 100 software developers have signed on for ports to Avion, a company spokesman said.

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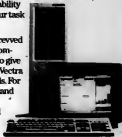
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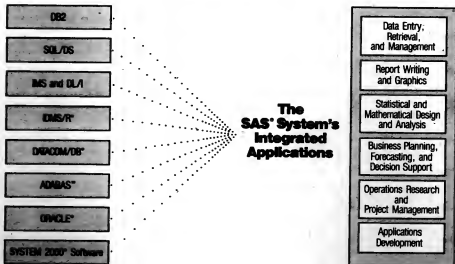
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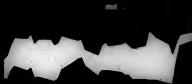
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Mips takes RISC in data center market

BY J. A. SAVAGE
OF STAFF

Reduced instruction set computing (RISC) machines got a big push toward the traditional data center market with last week's introduction of Mips Computer

Systems, Inc.'s most powerful machine.

Simultaneously, the company announced that Control Data Corp. would be selling Mips systems.

Using emitter-coupled logic (ECL) chip technology for its

processor, the RC6280 computer runs both technical and commercial applications at 55 million instructions per second (MIPS), according to the company. ECL chips are more delicate and cost more than CMOS, but they are much faster.

Mips is the third company in less than a month to launch new bids for the data center market after formerly having no offerings in that area. Digital Equipment Corp. and Tandem Computers, Inc. have each offered mainframes. Tandem with its

proprietary operating system, Guardian, and DEC with its own VMS operating system. Mips' new machine, the RC6280, runs on the Unix operating system.

Mips also claimed that its I/O subsystem provides 200M byte/sec. "across multiple VME buses."

"The problem," said Andrew Allison, editor of the "RISC Management" Newsletter, based in Los Altos, Calif., "is that you need to add five VME bus cabinets." Each cabinet handles only 33M byte/sec.

**WHAT
MANAGER
is going to
risk his job buying
Mips?"**

BONNIE DIGRIUS
INFOCORP.

DEC and Tandem are likely to have an easier time nudging into the mainframe market than upstart Mips, according to Bonnie Digrius, an analyst at Santa Clara, Calif.-based Infocorp. DEC and Tandem have current users who are looking for more capacity and are likely to take the next step up from the same vendor, she said.

"What IS manager is going to risk his job buying Mips?" Digrius said. She added that while Mips lacks credibility in the mainframe market, CDC has lost much of its credibility. "CDC is holding on by their fingernails."

New sales techniques

In the cases of DEC and Tandem, as well as Mips, the sales forces need to learn how to sell into a mainframe market, according to Digrius.

At the same time that Mips was announcing its new high-end machine at Unix Expo in New York, the company also was demonstrating two midrange machines that had been introduced a week earlier.

Those systems, the RC3260 and RC3240, are said to provide performance equal to or higher than that of their predecessors at lower prices. They are more compact but are essentially repackaged from earlier models, according to Allison.

Claiming to be the first company to provide the Systems Performance Evaluation Cooperative's Specmark performance ratings for its systems, Mips said the RC3260 provides 16.5 Specmarks and 29 MIPS and that the RC3240 runs at 15 Specmarks and 18 MIPS. The company said it expects Specmark numbers for the RC6280 to be available by the end of the year.

Prices start at \$55,000 for the RC3260 and at \$30,000 for the RC3240.



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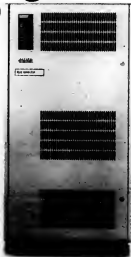
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EDITORIAL

Rank and file

LESTER THURLOW HOLDS back very little when talking about the magnitude of the challenge facing the U.S. as the era of truly global economy goes from the early light of dawn into full daylight in the coming decade.

And the dean of MIT's Sloan School of Management was certainly frank in his assessment of a potentially fatal flaw in our economic fabric when he addressed guests at *Computeworld's* Premier 100 gala last week in New York.

Global leadership, Thurlow said, will not rest with those nations endowed with natural resources. Rather, the nations that have invested in human capital through education, nations that churn out a skilled cadre of "privates and corporals" from the high schools, will dominate.

Alas, we all know the truly grim realities of large segments of our high school population, particularly in the inner cities. Dropout rates are staggering among certain groups. Graduates in numbers that are embarrassingly high cannot read beyond eighth-grade levels. Our young adults have trouble identifying the century in which the U.S. Civil War took place, let alone understanding the significance of such events.

Meanwhile, the high school students who score the highest in standardized math tests are from Hungary. The top of the class in physics testing comes from the Soviet Union.

Where we do outshine the rest of the world, as the dean noted, is in our university system. There we are preparing what he termed the "colonels and generals" for tomorrow's economic battlefield.

A recent *Computeworld* study [CW, Oct. 30] ranked the best IS graduate programs in the U.S. (a list, by the way, that was topped by Thurlow's Sloan School). It is abundantly clear why the front-runners on our list attained their position. Each school has a vision of the future where IS professionals must have that vital blend of technological and managerial skills. This vision is then projected onto the curriculum and then manifested in the great demand for the products of the top schools' programs.

But again, these graduates are the colonels and generals. And as we noted last year, an increasing number of IS students, particularly at the graduate level, are foreign students who are inclined to take their skills back home.

And what of the colonels and generals that remain here? Aren't they only as effective as the soldiers they lead?

That is the fatal flaw, Thurlow said. We are in danger of entering the 1990s woefully ill-equipped for the jobs that will exist because we haven't trained our workers to read, write, compute and think like productive human beings.

There is no question that this country possesses the greatest investment in information technology. If we don't seriously acknowledge the gravity of the education challenge, that investment will soon look like Howard Hughes' "Spruce Goose" — a tremendous plane, but it never really got far off the ground.



LETTERS TO THE EDITOR

Transfixer sold

The In-Depth article "Picking your testing tool box" [CW, Oct. 9] complimented Transfixer, the Cobol-based test data distiller and coverage monitor. On July 1, 1989, Marble Software sold the Transfixer product outright to J. Chris Miller & Associates (JCM&A).

JCM&A is extending Transfixer to the personal computer and to accommodate languages other than Cobol. One Transfixer scenario distills production data on the mainframe for testing and coverage analysis of programs maintained on personal computers.

JCM&A is a software re-engineering firm offering consulting, training and products for personal computer support of mainframe systems.

J. Chris Miller

J. Chris Miller & Associates
La Grange, Ill.

New faithful

After participating in the recent Wang Laboratories, Inc. users conference, I found that the article "Wang faithful convene, regain hope" [CW, Oct. 16] fell far short from the truth of the matter.

The Wang "faithful" are only so because the VS platform performs exceedingly well for their organizations. Several system administrators from installations only running Wang WP or WP+ report that they are under attack from advocates of local-area networks and IBM Application System/400s. Users report that these alternate platforms require much higher levels of support.

Regarding the LAN penance, a recent front-page article in CW

indicated that LANs are conservatively estimated as being down 6% of the time; any company's VS 7010 has not been down in the past year — not once.

Information systems and data processing managers supporting diverse applications have strong ties to Wang. Organizations that have bought into Wang's integrated software platforms (particularly the fourth-generation language PACE) continue to reap major benefits in terms of short Application Development Life Cycles and ease of program maintenance.

I note that CW has touted the achievements made at El Paso Natural Gas [CW Special Report, Oct. 9] without mentioning that Wang has the only platform that could support development of such robust applications (i.e., DBMS, WP, image and electronic mail all integrated).

I take exception to Tom Willmott's quote that Wang has "still not identified or communicated what the vision is." It was clear to all attendees that Wang is moving the VS toward an enriched client/server architecture with very strong support for industry standards and graphical user interfaces.

Unix was not discussed at the conference because most current users are not interested in it. Wang itself is committed to Unix. I expect that Wang's pricing on Image and FreeStyle will get more competitive. Compatibility with LANs and the Banyan/VS products are clear signals about the future. Wang's new line of personal computers looks solid.

To say that the Wang faithful regained "hope" is out of line: what the Wang faithful regained was confidence. Now, we can get on with delivering applications

in our own organizations.

Stephen L. Koller
Director, Information Services
Int'l. Exec. Services Corp.
Stamford, Conn.

Earlier connection

The article "Oracle previews next release" [CW, Oct. 9] contains a piece of misinformation. Oracle's executives state that Version 7.0 will be the "world's first true distributed database management system." This statement is incorrect. Laptop Connections, Inc.'s product "Connect," a multiterminal distributed database system, was initially demonstrated at the PC Expo show in New York on June 20-23, 1989. We are working on a Version 2, which will be released early in 1990.

It is interesting to note that we have tried on several occasions to get *Computeworld* to print a new product announcement or write an article covering our product; the first attempt was in early May 1989, but for some reason we have been unsuccessful.

Laptop Connections will be releasing its product early next year. So, let's set the record straight — Oracle does not really have the "world's first distributed database management system."

Jody Isaac
Regional Sales Manager
Laptop Connections, Inc.
Marlboro, Mass.

Computeworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computeworld, P.O. Box 9171, 375 Commonwealth Road, Framingham, Mass. 01701.

Is Unix really the answer?

GILBERT P. WILLIAMSON



Driven by users, a new era of freedom in computing is emerging, with Unix as the rallying cry. The framework of a user revolution based on Unix is already established. First, some computer hardware and software vendors, for the good of users, are seeking bilateral disarmament. We have witnessed the weapons of proprietary systems being laid down at borders that once were heavily guarded.

But while it is virtually impossible to find a vendor that publicly disagrees with open systems, there remains an abundance of vendors still essentially pursuing a proprietary strategy. Proprietary vendors are not addressing the real needs of users.

How does one tell a company that is merely engaging in rhetoric from a company that is really serious about open systems? As in all other endeavors, you measure by the results — much like "on-site inspections" for weapons systems. As always, action speaks louder than words. Are vendors making their products more open or continuing a "lock-in" strategy?

Promises, promises

Computer glasnost, or the trend toward open systems, like its political counterpart, promises "perestroika," the restructuring of an established order, as well as revitalized productivity.

Computer glasnost refers to a set of standards that enable interoperability of different computers, subsystems and software. These standards cover operating system interfaces, languages, I/O interconnections, communications protocols and graphical interfaces.

Glasnost, both in the political arena and in the information systems industry, is in the best interest of all involved. But when will it come to fruition? And within computer glasnost, how much voice will the user ultimately have in the process?

FROM THE PERSPECTIVE of price, Unix is a boon, because it forces all of us in the industry to compete more than we have in the past.

Happily, those answers will not come from vendors, as they have in the past. Today, user benefits are central, and Unix users, in particular, have a major voice. The key phrase in computer glasnost is "user independence." This is an economic issue that proprietary-driven vendors would prefer to hide.

"Free-market" competing brings greater competition to the marketplace and accelerates technological progress. When price/performance, rather than manufacturer loyalty, becomes the criterion for decision, users are free to choose systems that best meet their needs. For the user, the economics of this competition are also clear.

The portable and evolutionary attributes of open systems protect an organi-

zation's investment in hardware, software and training. All these contribute to a notable increase in individual productivity and organizational efficiency.

In addition to the economic benefits, users gain early access to advanced technology of the highest quality and are able to incorporate new technology rapidly.

Good points

Clearly, there are advantages for those vendors that are not economically tied to proprietary offerings. These advantages can be passed on to users. The primary advantage is that time and money aren't



NICHOLAS AGUI

wasted in reengineering existing technologies or rewriting applications for a particular hardware product.

This allows both the user and the vendor to leverage the vast investments made in technological development throughout this research-intensive industry.

Industry-standard software also will greatly improve reliability because the discovery and correction of software errors occur at a rate proportional to use.

The truly competitive systems from the beginning of time almost always have been systems that offer the best price/performance.

From the perspective of price, Unix is a boon, because it forces all of us in the industry to compete more than we have in the past.

Unix is attracting a variety of vendors — both hardware and software — to offer products that can work together to best meet users' needs.

So, the bottom line is that Unix users receive improved price/performance from increased levels of research and development funds that are available to address user issues. That is evidenced in what is happening in the marketplace today.

Users deserve a choice — the freedom to choose solutions, technology and vendors. Unix is just one part of the open systems story. I think it is fair to say that Unix has been the banner of the open systems revolution.

EFREM G. MALLACH



Much has been made of minicomputer industry troubles. Conventional wisdom pins the blame on increasingly powerful desktop microcomputers.

However, a key reason for the recent woes in the minicomputer industry lies at the door of the vendors and their handling of Unix. The issues are not technical — security, file handling, etc. They are emotional and psychological.

ize what they're doing or why they are doing it.

Mini vendors can't do much about improved microcomputers, but they can do something about Unix acceptability.

First, they must deal with the vacuum in most users' minds around the phrase "commercial Unix." No vendor is rushing in to fill it. There is no other market segment of remotely comparable size that gets slammed as if it were a leper. In the absence of one or a few top-rank vendors who associate themselves with this market — and who base their corporate strategy on this market, commercial users will avoid Unix.

The second reason commercial users avoid Unix is squabbling within the Unix camp. Users shouldn't care about this. Rapidly narrowing differences among vendors of Unix are esoteric and affect few applications. No matter. This is a psychological issue, not a technical one. Users are unwilling to get involved in the Unixify.

Uneasy decision

A purchase feels like a commitment to one side over the other. It's like bartenders fighting in front of customers. Even those whose service is not affected find the scene disconcerting and take their business elsewhere.

To eliminate this emotional obstacle to Unix acceptance, the Open Software Foundation (OSF) and Unix International must bury the hatchet.

Let's face it: If AT&T's present structure and policies had been in place two years ago, OSF never would have been formed. OSF has made a real contribution by forcing AT&T onto the straight and narrow. Yet, its core software-to-be — IBM's AIX — has turned out to be less than expected. (Some hint that its deficiencies are part of a carefully orchestrated

THE TROUBLE IS, information systems folks as a group do not feel that Unix is a viable commercial operating system.

ed IBM Unix-delaying strategy? The OSF interface, Hewlett-Packard Co.'s Motif, has won over even AT&T supporters' hearts. If AT&T would roll back its latest round of license fee hikes and commit to future stability in that area, it should be possible for both sides to get together. Public disputes between rival Unix groups hurt all vendors, including those who may seem to be "winning."

The bottom line is that two things must happen for minicomputer sales to perk up. The Unix vendor community must unite, and one or more substantial firms must decide that commercial Unix can be the cornerstone of a viable corporate strategy. Once these things happen, the emotional factors blocking a minicomputer recovery will be gone. Minicomputer sales will turn up again. Suddenly, the obvious reasons for the pundits will not be so obvious any more. Pundits will send out reports explaining what happened, never mentioning that they were wrong in 1989.

Some things, after all, never change.

Williamson is president of NCR Corp.

Mallach is a faculty member at the University of Lowell in Lowell, Mass., and a consultant to users and vendors.

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IS identity crisis too much to handle

READER'S PLATFORM

EUGENE CLARKE

My world collapsed recently during a strategic planning meeting between information systems and our marketing department. It collapsed in a three-sentence exchange between the director of IS and the vice-president of marketing.

"How can we in IS help you to realize your goals?" the IS director asked. This seemed like a good open-ended question, and I was waiting for the vice-president of marketing to embrace IS in his confidence. IS was prepared to act as a full business partner with the marketing department.

The vice-president of marketing looked directly at the IS director and said, "Beyond capacity planning for your computers, I don't know how you can help. I'm not even sure what your role is in all of this." This response was shattering for many reasons. But it served to add a dose of reality to my world.

We in IS like new beginnings. The year 1984 was a new beginning for me. The director of MIS outlined a new and challenging role for us programmers (now business analysts) for the '80s. We were to become less technical and more business-oriented. We were to learn the business, learn to develop business solutions to business problems and interact with our end users (now business partners) on their level. We were to look like, act like and function like consultants for one of the Big Eight accounting firms.

New buzzwords

We went to many seminars on "Consulting Skills," "Strategic Business Planning," "Writing Business Proposals" and "Presentation Skills." We implemented a full-functioning Help desk, and in 1987, the Information Center was opened. In-house program development was out, and commercial packages were the trend of the future. We implemented a major manufacturing package complete with end-user reporting tools. Relational database and connectivity (now networking) became the new buzzwords.

MIS was reorganized and changed its name to IS. Then it reorganized again so as to "better reflect" our new role as information consultants. The Operations, Technical Support and Maintenance Programming functions were relegated to the back room. The philosophy was this: We are not a technology function, we are a business consulting function.

IS expanded its systems development group by bringing in people with MBAs and masters degrees in systems science. This group was designed to redefine the role of IS within our business. IS was striving hard to be a business consultant for our business partners.

The words "risk taking" and "entrepreneurial" became common terms along with system "flexibility" and "maximum competitive advantage." The company was preparing for "global markets," and IS was preparing for a "global IS strategy." IS was prepared to act as an integral part of the business decision-making pro-

cess. We were ready to have our director take a seat on the operating committee at the vice-president level.

I liked this strategy. It felt good. IS would finally gain its rightful place within the business. We would gain the respect of our business partners. We would be in the trenches, side by side with our business partners, fighting the strategic business battles.

But what happened? Why does the vice-president of marketing still look at us as a service function and not as a business partner? What did we do wrong? We are a part of the Team, aren't we?

The short answer is, "no." IS or MIS or DP is still considered a technical service function within a business. Our historical role of providing critical computing and technical services overshadows all else. To an end user, asking IS to be its business partner is like asking the dry cleaner to help them pick out a wardrobe.

The IS divide

Therefore, IS has an identity crisis, and the crisis is tearing apart the function. IS has split itself into a business consulting entity and a technical/operations entity. The consulting entity is frustrated be-

cause it has made little impact within the business. The technical/operations side is seeing morale drop as IS management tries to ignore its existence. This loss of morale is aggravated as top management considers "outsourcing" basic operations and technical functions, a la Kodak. Yes, resumes are flying, and we are losing valuable technical skills.

What is the answer to this crisis? I don't know. I'll have time to think about it during my 18-month educational leave to complete an MBA degree with an MIS concentration at State University of New York at Binghamton. However, I do know that when I return to work, it won't be in IS. It will probably be as an IS consultant in our marketing department. At least my identity will be secure.

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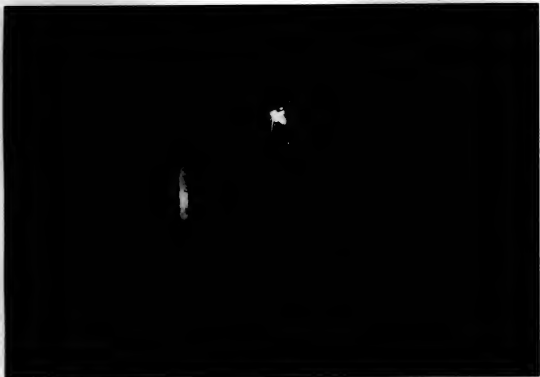


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Clarke was a supervisor in production systems support at Norwich Eaton Pharmaceuticals in Norwich, N.Y.

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SYSTEMS & SOFTWARE

HARD TALK

Rosemary Hamilton

Minding its S's and J's



IBM would never say so, but one of the most important tasks for its new 3090 J models could be to bring a quick, painless death to the 3090 S models.

Certainly, IBM did not think of this when development began on the J models. However, as S model events unfolded this year, the thought had to have popped into the minds of some IBM executives.

Let's face it—the S models have had a dark cloud hanging over them almost since they got out the door. Initial shipments in the fall of 1988 went fine. Early users were gung-ho on the new systems.

However, at the start of 1989, reports surfaced about chip problems. This turned into S model shipment delays. By midyear, IBM was faced with reports from the field that thermal conduction modules (TCM) were failing on S models at a much higher rate than normal. IBM insisted that the failures were typical of a new product.

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Inside

- Status systems keep Dhaklemper's nightmares at bay. Page 29.
- Apple readies for CASE management work. Page 29.
- Desktop system packs super wallop. Page 31.

IBM spices up batch offering

BY ROBERT MORAN
CIVIL SERV

Although users said IBM's new release of MVS/ESA is not a cure-all, they welcomed its potential as a tool to pry open the batch processing window. It also can help to shut the window of vulnerability by tightening security.

Along with ESA security enhancements, IBM announced Version 1, Release 9 of its Resource Access Control Facility (RACF) software, which works in conjunction with ESA and its subsystems.

With its introduction of 16 new 3090 mainframes recently, IBM introduced a batch process-

ing enhancement called Hyperbatch, which it said speeds batch processing by up to 60%, and the Move-Page facility, a hardware instruction that essentially is an improved pipeline between Hyperpaces in expanded storage and central storage.

IBM said the new release of ESA—MVS/SP 3.1.3—will be available December 22. Graduated monthly charges for MVS JES/2 range from \$4,280 to \$5,795, depending on the size of the processor. With MVS JES/3, prices range from \$4,815 to \$6,520.

The use of Hyperbatch is restricted to 3090 S and J models, which contain the Move-Page facility. These models will not carry

an additional charge, IBM said.

The dual facilities reduce batch processing time by streamlining the process of pulling data into expanded storage, moving it to central storage and eluding the time-consuming step of fetching data from direct-access storage devices.

Jack Owens, executive vice president and director of EDP services at Shannon Lehnman Hatton, Inc. in New York, said that the company is testing Hyperbatch with more than 200 production jobs. Owens found that "individual jobs, depending on secondary limitations, have a decreased elapsed time from 30% up to 80%."

According to IBM, Hyperbatch does not require organizations to rewrite applications or make JCL changes. "Hyperbatch is transparent from an application programming standpoint," Owens said. "It is effectively a table update and the execution of the job."

According to Owens, Hyperbatch benefits only sequential processing and is usable for reading large portions of VSAM files sequentially or for using QSAM to read master files sequentially.

As such, random processing will not benefit from Hyperbatch—a role assigned to Batch Local Shared Resources (LSR), which uses Hyperpace buffers much the same way that Hyperbatch does and accesses VSAM files.

Continued on page 31

Card maker turns to DPS 9000

BY ROSEMARY HAMILTON
CIVIL SERV

COLORADO SPRINGS—Current, Inc., a mail-order greeting-card company, needed a better way to manage its customer base of 11 million homes.

The Bull H. N. Information Systems, Inc. DPS 88 just was greeted with an upbeat reaction from industry observers who said the company badly needed a

of the smoothest transitions we've made."

Bull introduced the DPS 9000 in November 1988 and was greeted with an upbeat reaction from industry observers who said the company badly needed a

Current

new high-end machine to hang on to its customer base. At the time, Bull claimed to outdo IBM in transaction processing. However, Current was more concerned with running its greeting-card business than with IBM comparisons.

According to Richard, a top-of-the-line system is more than just critical to Current's business—it actually is the business. As a mail-order company, Current

relies strictly on the management of its customer list and effective mailings to stay profitable. "Our retail store is our catalog and how that's managed and mailed makes our success," he said.

Richard said one of the most obvious improvements with the DPS 9000 has shown up in Current's direct-mail analysis software program. The software is used to analyze the customer base and determine which shoppers are most likely to respond to a given direct-mail campaign based on their previous buying patterns.

The software, implemented in 1983, has been a big money-saver for Current, Richard said. By tailoring its direct mailing to select customers instead of blanket the customer base, Current can save thousands of dollars in postage alone. "When we

ran this for the first time, our mailing costs dropped by about \$300,000," he said.

With the DPS 88, a full-scale run on the customer files could take up to 16 hours. On the DPS 9000, the same job takes only four hours. Richard pointed out that the reduced runtime also takes into account the use of new tape-cartridge drives, which replaced reel-to-reel drives used with the DPS 88. Total processor time dropped from six hours to about one hour, he said.

Current designed a customer system unlike today's typical database management systems. The customer files are stored on tape and pulled into the system as needed. The analysis is then run against the raw files.

Richard said the DPS 9000 is well suited to this task because a single, powerful system is more effective than several distributed systems would be. "The analyses we do are huge programs that run against all the data," he explained. "There's really no way to distribute that job and use multiple smaller mainframes."

Spotlight

Wouldn't it be nice to have a couple more terminals on your desk?

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Stratus allays one retailer's fears

ON SITE

BY MARYFRAN JOHNSON
OF STRATUS

Some people get the willies in high places. Others shudder at the thought of elevators, crowded rooms or dark basements.

Angelo Casciato's greatest fear centers on the day after Thanksgiving, when the mere thought of computers crashing makes his retailer's heart thump with anxiety.

"Being on-line is an absolute necessity for us," said the data processing operations manager for Joseph B. Dahlkemper, Inc., which owns a chain of nine catalog showrooms in New York, Pennsylvania and Ohio. "Having my computer system down on that day would mean millions of dollars lost."

Since 1984, Dahlkemper's has relied on a Stratus XA2000 Model 120 and an older Model 600 to keep Casciato's *dear noire*

in his place.

"I love Stratus. It allows me to sleep at night," Casciato said. In early October, a second Model 120 replaced the older machine.

Now Dahlkemper's has decided to put Stratus' newest entry-level machines to work as in-store processors in all nine of its catalog showrooms.

The XA2000 Model 30 was introduced on Oct. 3 as the first Stratus machine that offers selectable levels of fault-tolerance.

In a lakeside city beset by electrical storms, downtime was an unwelcome

way of life for Dahlkemper's store clerks when two Digital Equipment Corp. PDP-11/70s ran the business from 1977

through 1984.

The company's staff of 800 employees doubles to 1,600 during the three months before the Christmas holiday, when Dahlkemper's rings up 60% of its annual sales.



Dahlkemper's relies on a Stratus XA2000

During one nightmare Christmas season before the shift to fault-tolerant systems, there was a disk-controller problem on

the DEC machine that caused a variety of problems and inventory foul-ups over a five-week period.

"It hampered our business quite a bit, though it would be hard to quantify the sales we may have lost," Casciato said.

These days, however, the company advertises itself as the place where customers get "No. 1 service" at all times.

"This kind of system is what retailers are looking for: redundancy in hardware. What's missing in the software," Casciato explained.

"You either have to develop it in-house or find a package out there to convert over. Normally, when you find one you like, it has the hardware with it and it's standardized. There's the catch-22," he added.

The Stratus system now takes care of all of Dahlkemper's

IS requirements except for accounts payable and general ledger, which are still residing on the remaining PDP-11/70.

"Next year, we'll be converting that to Stratus as well," Casciato noted.

Veritable smorgasbord
Dahlkemper's customized software — rewritten in-house using the former DEC applications as a design base — includes, among other things, an inventory management and auditing system, sales analysis information, a bridal registry database and debt/memo tracking.

The stores sell everything from jewelry, housewares and consumer electronics to sporting goods, toys, and most recently, furniture.

"The availability of stock and inventory information is vital," said Marketing Director Bill Jackson.

"When the customer is on the phone, or standing there in front of you at the store, that ability to push in the item and find out if

Continued on page 31

Apple presents a case for its CASE platform

BY JEAN S. BOZMAN
OF STRATUS

SAN FRANCISCO — Apple Computer, Inc. took a tentative step closer to the mainframe IS community late last month, as it presented a suite of computer-aided software engineering (CASE) tools at CASExpo '89 here.

Apple described its Macintosh platform as synergistic with software development. "Apple's mission and the goals of CASE are congruent," Morris Tardalsky, Apple's senior vice-pres-

ident for information technology, told his CASExpo audience. "They both aim toward empowering individuals which means more productive programmers, analysts, designers and architects." Until recently, Tardalsky had managed DB2 development at IBM's Santa Teresa, Calif., software laboratory.

While West, manager of Apple's CASE technologies division, said in an interview that programmers would be more productive using Macs as "windows" into such complex systems as IBM mainframes, Digital

Equipment Corp. VAXs and other large-scale machines. "When you have a CASE tool on a Macintosh, you are leveraging the productivity tools that come standard on our platform," West said. Those built-in tools, he said, include the Macintosh graphical user interface, consistent help menus and access to hundreds of word-processing and graphics packages written for the Macintosh.

West said Apple's CASE tools will eventually cover four broad categories: end-user tools, object-oriented design tools, tools to design cooperative-processing applications and traditional CASE tools, such as Cobol generators. He noted that Apple's CASExpo visit was a move onto new ground. "Until now, we have been seen by others as for-

ign entities in the MIS and systems engineering worlds." Apple showed off its CASE wares in the form of Macapp, an object-oriented application generator, the Hypercard object-oriented generator for database applications and a decision-support software called MacDSS.

In other developments, attendance at CASExpo fell far short of the 1,500 goal set by show organizers, apparently because of the Oct. 17 earthquake.

Those who walked through the exhibit area saw a preview of McDonnell Douglas Computer Systems Co.'s Prokit Workbench Release 2.0. The new software, now in beta test at several large user sites, extends the 2-year-old Prokit Workbench 1.0. Prokit's new features include generation of "schemas"

for IBM's DB2 relational database management system; support for ad hoc queries and for report-writing; and extensions to Prokit's own data repository definitions.

"We're extending the meta-model, which is our definition of the data repository," explained Thomas L. Schwab, product manager of CASE tools for McDonnell Douglas' Systems Integration Company, in St. Louis. The company added 25 attributes such as data elements and data processes to Prokit.

Users of Prokit Workbench 1.0 will receive a copy of Release 2.0 as an upgrade at no additional charge, once it ships this December. New users will pay \$9,200 for a single copy, or \$6,500 per copy if 10 or more licenses are sold, Schwab said.

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A Comparison Chart of the Major Cooperative Processing Software Products:

Functions:	SUPER-LINK® Family™	Easel™	Mozart™	Archie®	IBM's HLLAP™	IBM's APPC™ or C/PL™
Processing Topologies Supported						
SAA/CTA interfaces for existing 3270 applications:						
Under PC/DOS	Yes	Yes	Yes	Yes	Yes	Yes
Under OS/2	Yes	Yes	Yes	Yes	Yes	Yes
Transition from PC/DOS to OS/2	Yes	Yes	Yes	Yes	Yes	Yes
3270 Communications	Yes	Yes	Yes	Yes	Yes	Yes
Peer-to-peer Communications	Yes	Yes	Yes	Yes	Yes	Yes
For extending existing 3270 applications for new applications	Yes	Yes	Yes	Yes	Yes	Yes
Maintenance of PC applications & data from a central library	Yes	Yes	Yes	Yes	Yes	Yes
Background file transfer in PC/DOS	Yes	Yes	Yes	Yes	Yes	Yes
Background peer-to-peer processing in PC/DOS	Yes	Yes	Yes	Yes	Yes	Yes
Object Orientation	Yes	Yes	Yes	Yes	Yes	Yes
CASE/Analysis/Generation	Yes	Yes	Yes	Yes	Yes	Yes
SAA CUA Support						
All functions supported on PC/DOS:	Yes	Yes	Yes	Yes	Yes	Yes
Action Bar	Yes	Yes	Yes	Yes	Yes	Yes
Full-down menus	Yes	Yes	Yes	Yes	Yes	Yes
Pop-up menus	Yes	Yes	Yes	Yes	Yes	Yes
Messages and Prompts	Yes	Yes	Yes	Yes	Yes	Yes
Dialog Boxes	Yes	Yes	Yes	Yes	Yes	Yes
Forms	Yes	Yes	Yes	Yes	Yes	Yes
Direct support for multiple levels of action bars and roll-overs	Yes	Yes	Yes	Yes	Yes	Yes
Action bars and roll-overs in a form	Yes	Yes	Yes	Yes	Yes	Yes
Single and multiple selection menus	Yes	Yes	Yes	Yes	Yes	Yes
Menus and Lists within a form	Yes	Yes	Yes	Yes	Yes	Yes
CUA defined help	Yes	Yes	Yes	Yes	Yes	Yes
Development System Features: available without programming						
Field-level context-sensitive help	Yes	Yes	Yes	Yes	Yes	Yes
Optional learning mode (help always displayed)	Yes	Yes	Yes	Yes	Yes	Yes
Included User Assistance (for selection lists)	Yes	Yes	Yes	Yes	Yes	Yes
Dictionary for storage and reuse of definitions & documentation	Yes	Yes	Yes	Yes	Yes	Yes
Data Editing/Validation:						
Data type/mask checking	Yes	Yes	Yes	Yes	Yes	Yes
Range/limit checking	Yes	Yes	Yes	Yes	Yes	Yes
Data formatting/checking	Yes	Yes	Yes	Yes	Yes	Yes
Validation against database files	Yes	Yes	Yes	Yes	Yes	Yes
Required fields	Yes	Yes	Yes	Yes	Yes	Yes
"Must Fill" fields	Yes	Yes	Yes	Yes	Yes	Yes
Zero not valid fields	Yes	Yes	Yes	Yes	Yes	Yes
Multiple validation points during PC processing of transaction forms	Yes	Yes	Yes	Yes	Yes	Yes
Complete local application testing: database maintenance, interface testing, and menu flow communications simulation	Yes	Yes	Yes	Yes	Yes	Yes
Language Objects Available Without Low Level Programming						
Display and selection from:						
In-memory lists	Yes	Yes	Yes	Yes	Yes	Yes
File lists	Yes	Yes	Yes	Yes	Yes	Yes
Database lists	Yes	Yes	Yes	Yes	Yes	Yes
Menu display and selection	Yes	Yes	Yes	Yes	Yes	Yes
Help at all levels (Panel, Action bar, Menu, Form, & Field)	Yes	Yes	Yes	Yes	Yes	Yes
Error Processing	Yes	Yes	Yes	Yes	Yes	Yes
Add/Update/Delete/locate on:						
Sequential files	Yes	Yes	Yes	Yes	Yes	Yes
Database files	Yes	Yes	Yes	Yes	Yes	Yes
Host log sequence	Yes	Yes	Yes	Yes	Yes	Yes
Determining 3270 screen identification	Yes	Yes	Yes	Yes	Yes	Yes
Read/Write all fields on 3270 screen with a single command	Yes	Yes	Yes	Yes	Yes	Yes
Determine dynamic 3270 field attribute changes	Yes	Yes	Yes	Yes	Yes	Yes
Dynamic modification of field attributes based on form entries	Yes	Yes	Yes	Yes	Yes	Yes
Initial values displayed	Yes	Yes	Yes	Yes	Yes	Yes
Previous/next record fields	Yes	Yes	Yes	Yes	Yes	Yes
Development Environment Comparison						
Object Orientation	Yes	Yes	Yes	Yes	Yes	Yes
Dictionary and documentation	Yes	Yes	Yes	Yes	Yes	Yes
Panel/Form painter for Creation/Maintenance	Yes	Yes	Yes	Yes	Yes	Yes
3270 screen capture: Picture and attributes	Yes	Yes	Yes	Yes	Yes	Yes
Application Generation (CASE)	Yes	Yes	Yes	Yes	Yes	Yes
Incremental edit (language sensitive)	Yes	Yes	Yes	Yes	Yes	Yes
System/user defined templates	Yes	Yes	Yes	Yes	Yes	Yes
Integrated compile/linking	Yes	Yes	Yes	Yes	Yes	Yes
Keyboard re-mapping	Yes	Yes	Yes	Yes	Yes	Yes
Compiled environment	Yes	Yes	Yes	Yes	Yes	Yes
Execution-time source debugging	Yes	Yes	Yes	Yes	Yes	Yes
Host Environment Support for Peer to Peer						
MVS - CICS	Yes	Yes	Yes	Yes	Yes	Yes
MVS - IMS/DC	Yes	Yes	Yes	Yes	Yes	Yes
MVS - TSO	Yes	Yes	Yes	Yes	Yes	Yes
DOS/VSE/CICS	Yes	Yes	Yes	Yes	Yes	Yes
VMS/CICS	Yes	Yes	Yes	Yes	Yes	Yes
DEC VAX/VMS	Yes	Yes	Yes	Yes	Yes	Yes
Minimum PC Hardware Requirements IBM XT/Clone, 640K	Yes	Yes	Yes	Yes	Yes	Yes

*Easel does not support the SAA CUA style interface under PC/DOS only under OS/2.
 †Easel also supports an extended data set for host files, known as peer-to-peer, to enable 3270 Super Link to be a stand-alone product of Multi Soft, Inc. - Lawrenceville, NJ.
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Multi Soft's SUPER-LINK® Family delivers SAA/CTA on DOS platforms Now!

Multi Soft's SUPER-LINK product family represents the leading edge of cooperative processing technology. It allows the development of SAA/CTA-compatible user interfaces now on standard low-cost 640K DOS PCs. It provides the full peer-to-peer cooperative processing capabilities of IBM's APPC (Advanced Program-to-Program Communications) product for PC/host applications. However, instead of requiring the use of LU6.2 SNA sessions, it works over the LU2-based networks that are already in place. Both standard, LU2-based SNA links, as well as asynchronous communications are supported. Not even IBM offers that kind of support now. All SUPER-LINK based applications port without change to IBM's OS/2, PM, and LU6.2 strategic platforms.

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EasySAA is an advanced Object Oriented CASE tool for creating SAA/CTA-compatible interfaces and cooperative processing applications with many features including:

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- Support for specific Objects: Forms, Panels (Windows), Menus, Procedures, Libraries, Help, data files, and 3270 & Peer-to-Peer Communication
- Object type sensitivity
- Automatic generation of CUA-compatible interfaces
- Support for Multiple Views and Representations of Objects
- And much much more!

Now you can create SAA/CTA-compatible interfaces in minutes and integrate them into existing mainframe applications.

In addition to EasySAA, Multi Soft's SUPER-LINK product family also includes:

INFRONT/DS™ (Development System) is a PC-resident developer's toolkit which includes: screen/window management, a 4GL with an object orientation specifically designed for cooperative processing, communications, and local file & database access. INFRONT/DS allows the developer to add new functions and SAA/CTA-compatible interfaces to any host application through either peer-to-peer or 3270 data stream interactions.

INFRONT/RT™ (Run-time) is the run-time software that allows the developer to deliver the PC portion of the peer-to-peer or 3270 data stream applications developed using INFRONT/DS.

INFRONT/HPO™ (Host Processing Option) provides peer-to-peer communications between a PC and a host. INFRONT/HPO applications on the PC use INFRONT/HPO message protocols to communicate directly to host applications written in standard 3GL. INFRONT/HPO takes care of interfacing to the low level communications channels, allowing the developer to concentrate on the functional requirements of the application rather than on the complex mechanics of communications.

INFRONT/SDF™ (Software Distribution Facility) automates the distribution and maintenance of PC software and files. INFRONT/SDF ensures that PC users always have the correct version of their PC applications and editing tables.

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Hamilton

FROM PAGE 27

generation. Despite these claims, IBM couldn't undo the negative feelings that had developed. The letter S had become associated with bad news.

At this point, the J models are not only a new high end for the mainframe line; the letter J itself represents a fresh start.

Of course, IBM would never speak of killing off the S models. So, there was no official cancellation of the product line. Instead, we got some typical roundabout maneuvers from which we can infer that IBM would like nothing better than to put the S model behind it.

We got 16 new J models added to the 3090 product line, along with a statement that S models will continue to be available at their current prices. If IBM wanted to continue moving S models, wouldn't it make sense to lower their prices?

Without a price break, the S models will now sell for almost exactly the same price as the J models. Let's see if IBM can find a user who wants to pay nearly the same price as a J customer and get 14% less performance and no new features.

What's more, IBM doesn't seem to want to find such a user. An IBM spokesman even said that if a customer came to IBM and put in an order for an S model, the company would likely point in the direction of a J. On top of that, users who had S models on order are now saying that IBM is automatically switching the order to the corresponding J model.

So, officially, the S models are alive and well. We can't expect IBM to say it, but the fate of the mainframe line couldn't be more obvious.

Another interesting aspect of the mainframe announcement was IBM's refusal to comment on the new high-end disk drive, the 3390 follow-on that has been delayed for months now. It would have made a nice large-systems package if they had given us a status report on the new drive as they rolled out mainframe hardware and software.

At the IBM press conference, William Grube, IBM's vice-president and assistant general manager of U.S. marketing and services, was asked twice for a disk-drive update and then asked again.

He never uncomfortable but didn't budge. He said that as soon as IBM felt the drive was ready to go, it would announce it. However, he also offered this good news: The San Francisco "bad news" had no impact whatsoever on our production. The drive is being manufactured at IBM's San Jose facility.

Hamilton is *Computerworld's* senior editor, systems.

Quen-16 packs super power onto desktop

BY MARYFRAN JOHNSON
OF STAFF

LAUREL, Md. — The Quen-16 "desktop supercomputer" — a high-performance parallel processor that its makers claim packs the number-crunching punch of a supercomputer in certain tasks — was unveiled recently.

At about the size of two IBM Personal Computers, the Interstate Electronics Corp. Quen Model 16 is an array processor that, linked to a Digital Equipment Corp. minicomputer or Sun Microsystems, Inc. workstation, can solve large computational problems faster and less expensively than a supercomputer, the vendor claimed.

It is the first commercial application of a low-cost parallel

processor that draws its supercomputing capabilities from the Department of Defense's Very High-Speed Integrated Circuits (VHSIC) technology.

The Quen architecture was developed at Johns Hopkins University's Applied Physics Laboratory and named after its inventor, Quentin E. Dolecek. It brings the computation speeds of a Cray Research, Inc. Cray 1 into the minicomputer price range, with an average price of \$100,000.

"This is a completely new paradigm for computing," said Dolecek, a principal researcher at Johns Hopkins' physics lab. "It is one of the first ones to attain that kind of computational speed at that kind of price. In a cost/performance ratio, it's groundbreaking."

Zmyslinski, vice-president of Dehlinger's management information system.

"If they can't look to use it a product is in stock, or what the price is, they don't know what to do. We keep no manuals in the stores."

Keeping up with growth. The ability to connect the two systems both physically and logically using Stratalink machines from Stratust in fit with the company's migration plan and growth expectations, according to Zmyslinski.

Once the smaller Stratust systems are installed in the stores, the company will connect them to the host computers using Stratalink, which is a Stratust networking product for remote access.

Dahlkemper's clerks will eventually have access to inventory information that is constantly updated at each of the nine stores registers as sales and the host computers change the inventory count to reflect them.

The chain of stores is now serving as a beta-test site for Stratust Office 2000, an office automation package that includes electronic mail, filing facilities, directories and Stratust's part of Wordperfect Corp.'s Wordperfect.

"Our employees rely on the machines totally," said Brad

IBM spices

FROM PAGE 27

ESA release has reduced elapsed job time up to 45%.

Don Egan, chief capacity planner at Provident Life and Accident Insurance Co. in Chattanooga, Tenn., has used Bitc LSR as a program temporary fix for about a month.

"Bitc LSR helps with certain types of jobs," he said. "But it is restricted to your own data sets and to your own address spaces."

In security software, RACF Version 1, Release 9 will meet

the BI security level of the U.S. Department of Defense, according to IBM. The company said that it previously met the department's C2 criteria.

RACF Version 1, Release 9 will be available for MVS and VM/SP in September 1990 and for VM/XA in November 1990, at a monthly charge of \$927.

According to IBM, the new release contains an enhanced MVS/ESA network job entry security for the transmission of information between systems as well as more control over MVS/ESA job submissions for determining the users' authority to submit jobs to the system.

The processor should be particularly welcome for applications such as signal processing, image processing, satellite data transmission, weather prediction or "anything where number crunching is involved," Dolecek said after the Quen-16 debuted at the IEEE Computer Society Symposium.

Although the applications library with the Quen-16 is "programmer-friendly," the need to rewrite source code to access the subroutines will vary significantly with different applications, said Bill Brundage, applications manager at Interstate Electronics. "To really achieve the maximum benefit from using a parallel processor, you have to

rethink the solutions to your problem," Brundage said. "If you're not willing to rewrite your code, you're probably not really interested in going to a parallel processing environment."

Quen processors are available with capacities from 80 million to 1.2 billion computations per second, which Johns Hopkins researchers said could now make possible the real-time data compression needed for low-cost satellite transmission of high-resolution television.

The Quen-16 is commercially available now for the family of desktop-size number processors that attach to computers from DEC and Sun Microsystems.

High-end tape drive improves 3480 price/performance 16%

BY ROSEMARY HAMILTON
OF STAFF

Tucked in the large systems announcement from IBM last month was the replacement for the 3480 tape drive.

A company spokeswoman said last week that the new high-end 3480 is intended to succeed the 3480, although the older tape subsystem will continue to be marketed for the near future.

The 3480 was introduced in 1985. The 3480 offers an overall price/performance boost of 16% over the 3480, IBM said.

Earlier this year, IBM introduced a lower end 3490 model intended for IBM's Application System/400 users. The A01 and A02 control units and new 804 tape drives are the first 3490

for users that want to fill out strings of 3480 units. The 3490 units will begin shipping at year's end, she added.

Because of the 3490's smaller size, it will also cost less to operate because it requires less cooling and electricity. In addition, it will be offered with a 12-month warranty. The 3480 has a three-month warranty.

HARD BITS

Target Pick

The Ultimate Corp. plans to resell minicomputers made by Hewlett-Packard Co. The deal could represent up to \$100 million in future revenue. Ultimate, which has resold Bull H. N. Information Systems, Inc. equipment as well as the IBM 9370, plans to sell the HP systems to the Pick market. Pick is the operating environment developed by Pick Systems, Inc.

Digital Equipment Corp. signed on Dac, Inc., a Nymex company in Baltimore, as part of its Cooperative Marketing Program. Dac makes a cash management system that runs on VAXs.

Stratus Computer, Inc. teamed up with EDI Solutions, Inc. to offer the EDI Solutions Edtran software on the Stratus fault-tolerant systems. Edtran is an electronic data interchange (EDI) translation package. With the Edtran software, the Stratus box would serve as a gateway for the inbound and outbound EDI traffic, the company said.

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TI users say they have it now

BY ELLIS BOOKER
OF STAFF

DALLAS — At a time when Texas Instruments, Inc. was promising to bring its computer-aided software engineering (CASE) product more in line with IBM standards such as AD/Cycle, TI users late last month claimed that IBM's product remains a paper tiger in comparison with TI's offerings.

TI said it will add support for OS/2, 3270 communications and IBM Token-Ring networks in the next version of the TI CASE System Information Engineering Facility (IEF), slated for release in mid-1990.

Less than two months ago, TI said IEF will comply with AD/Cycle, IBM's long-awaited Systems Application Architecture-based CASE strategy. Version 4.1 of IEF will also support the Common User Access (CUA) portion of SAA, TI promised.

Company officials indicated that in late 1990, the release of Version 5.0 will support cooperative processing and multiple platforms including Unix, Digital Equipment Corp.'s VMS and eventually, the IBM Application System/400.

While the 200 or so attendees at the conference seemed pleased by TI's repeated commitment to IBM's long-term direction, most said IBM's product trails the maturing IEF, which TI introduced in 1987.

Results to come

"Within three years, IBM will have something to show," said David S. Levine, data administration analyst in the IS department at Sony Corporation of America in Park Ridge, N.J.

An early first user of IEF, Sony now does all of its new development for its IBM 3090 under IEF, according to Levine, who said 50 to 60 of the company's 250 IS staff currently use the CASE product.

For Transworld Airlines in Mount Kisco, N.Y., support for IBM's strategy was a central issue when it elected to use IEF to rebuild its frequent-flight bonus system in 1987.

"We're a major IBM shop, we have an SNA network and SAA is our architectural standard. We would have been very concerned if TI hadn't supported SAA," said Cloese Goldborough, director of data resource management for airline information services at TWA.

Goldborough said she was happy with the quality of code generated by IEF, although she conceded that a structured programming methodology takes time to learn and implement.

"AD/Cycle is a framework and standards for [IBM's] repository," said Vaughan Merlyn,

chairman of CASE Research Corp., a Bellevue, Wash., consultancy. "TI has said that as these standards are published it will be compliant. . . . But TI can offer, soup-to-nuts technology today."

Still, IBM's repository concept will certainly affect TI's

own tool, which is composed of personal computer-based planning, analysis and design tools and a so-called Central Encyclopedia, a relational repository of business and systems data that resides on the mainframe.

"IBM's repository is a more

general tool than our encyclopedia," said John W. White, president of TI's Information Technology Group. The encyclopedia, he said, could be seen as a subset of an IBM repository.

Earlier this year, TI announced IEF interfaces for IBM's Cross System Product (CSP), the application generator component of AD/Cycle. However, creating similar hooks be-

tween the IBM repository and TI's Encyclopedia will be more difficult, because the information model, which defines data objects and processes inside the repository, has not been as fully specified as for CSP, White said.

The company's goal, according to White, is to provide improvements of fivefold and sixfold in development cycles and the quality of applications code.

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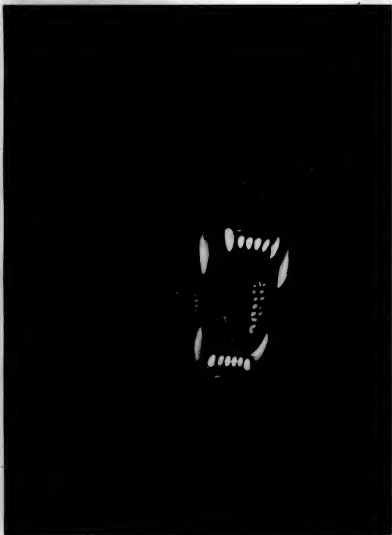
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Information Builders, Inc.

Academia leans on Minnesota super center

ON SITE

BY J. A. SAVAGE
CH 2247

MINNEAPOLIS — The breadth of the Mississippi River separates the University of Minnesota and the Minnesota Supercomputer Center, Inc. Yet, the private company is central to keeping academic users supplied with the expensive hardware they desire.

In the early 1980s, the university wanted to keep on the sharpest edge of supercomputer technology. "It's an extremely capital-intensive endeavor. Any way we looked at it, that was a recurring theme," said John Sell, president of the center.

The university would never have had enough funds to pay for the supercomputing resources it wanted. So instead of using scarce university resources, Sell spun off the center to sell services to commercial enterprises and use the income to help underwrite academic research.

At the heart of the center is a 512M-word Cray 2, from Cray Research, Inc. Its cooling system — an enclosed fountain of fluorocarbon-based liquid — sits in the middle of the custom-

eration problem, he said, because "the university gets what it pays for."

While not revealing the actual number of clients for the center, Sell said that most were domestic companies. He cited his clients' "sensitivity" in not reveal-

ing their names. "It's a recognition of the fact that supercomputers are an important tool in a competitive world," Sell said.

As a potential proving ground for new technology, the center gets its share of offers for free

equipment from vendors. Some of the systems have been yanked from the center prematurely, such as an ETA Systems, Inc. ETA 10. The company folded earlier this year.

Parallel-processing vendors have been pounding at the cen-

ter's door, figuring that use of their hardware there looks good in their user portfolio, Stadther added. But none have crossed the center's threshold.

There is no set formula to calculate which architecture or which vendor to accept, according to Sell, but he said he expects to embrace parallel processing, despite the current lack of software.

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LIZ STADTHER
MINNESOTA
SUPERCOMPUTING
CENTER

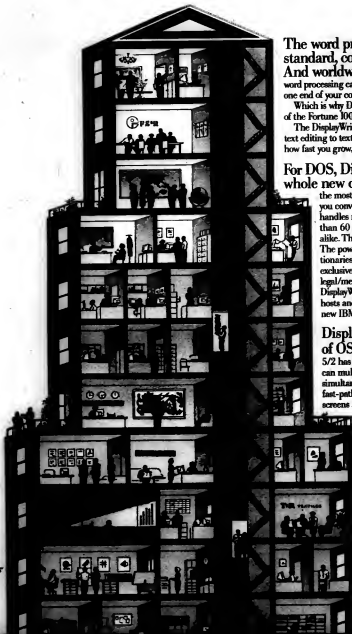
made building. The building's heating system functions off the excess heat generated by the high-powered computer — an efficiency welcomed in a Minnesota winter. It is flanked by a Cray XMP and an IBM 4381, which is the front end of the storage devices.

Serving about 100 users per day, the center has a typical time-sharing problem, according to Liz Stadther, director of user services and operations. Stadther and Sell downplayed competition between the university and commercial enterprises for CPU time. "The academic world has an insatiable appetite [for supercomputing], but so far we've had the capacity to handle it," Stadther said.

Both commercial and academic users pay for time on the supercomputers, but the university gets its time discounted, according to Sell. There is no allo-

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NEW PRODUCTS — SYSTEMS

Data storage

Software Extraordinaire, Inc. in conjunction with Avax International Ltd. has announced a tape backup subsystem that provides untended backups for the Wang Laboratories, Inc. VS user. The 8mm helical-scan AMW-2300 is said to offer up to 2G bytes of backup on a single tape cartridge.

According to the company, the unit is plug-compatible with the Wang Kennedy IOP or IOC and requires no hardware modifications to the Wang system. The Superback software reportedly allows backups to be scheduled when no operator is present and offers convenience and security features.

The subsystem lists for \$18,887. Software Extraordinaire 1419 8th Ave. W. Seattle, Wash. 98119 206-282-9422

Wang Laboratories, Inc. has announced a combination hardware and software product that provides high-capacity backup and restore capabilities for the Wang VS minicomputer line.

According to the company, the Model 2259V-2MT is an attended backup utility and cartridge tape drive that provides up to 2.3G bytes of data storage space. It operates with all VS computers, except the VS 80 and VS 50 models and can serve as either a stand-alone backup unit or as a supplement to existing storage devices.

The utility costs \$27,900. Wang Laboratories 1 Industrial Ave. Lowell, Mass. 001851 508-459-5000

Unbound, Inc. has announced a family of storage products designed for use with Digital Equipment Corp.'s Vaxstation 3100 and Decstation 3100 computer systems.

The 3100-Stor disk drive products are available as internal 3½-in. upgrades or as external 3½-in. and 5¼-in. subsystems, the company said. Pricing for the internal upgrades starts at \$1,460 for a 100M-byte configuration and \$2,880 for a 200M-byte model. External subsystem pricing starts at \$1,835 for a 100M-byte version, \$2,925 for 200M bytes and \$3,500 for a 380M-byte device.

Unbound 17951 Lyons Circle Huntington Beach, Calif. 92647 800-862-6863

Decision Data Computer Corp. has announced a 16M-byte memory expansion board designed specifically for the IBM Application System/400 Model

B-70 midrange computer system.

The Xtender/400 Model 5470-16 is said to be compatible with IBM memory expansion boards, as well as with standard IBM diagnostic software and procedures. The product is priced at \$16,600 and carries a

lifetime warranty. Decision Data Computer 100 Witzmer Road Horsham, Pa. 19044 800-523-5357

Processors

A 32-bit general-purpose VMEbus processor board based on Motorola, Inc.'s 68020 chip is now available from Radstone

Technology Corp.

Designated the 68-26, the board was created for multibus master systems and is offered with speed options ranging from 16 to 25 MHz. The product supports byte, word, triple byte and long-word transfers on aligned or unaligned boundaries, the company said, and block transfers for the VMEbus are also supported. Priced at \$2,190, the 68-26

comes with two asynchronous serial ports and a parallel interface.

Radstone Technology 20 Craig Road Montvale, N.J. 07645 800-368-2738

Point 4 Data Corp. has introduced a 25-MHz version of its Mark 386 series multibus com-

Continued on page 41

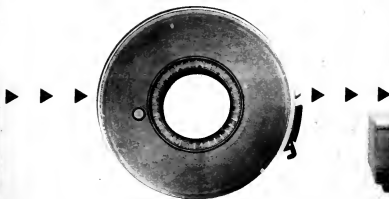


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With the Cipher 9000 Series 9-track tape subsystem and Tarsus software you can work with over 100 megabytes of mainframe data on a 10 megabyte PC. Quickly. Easily. Inexpensively. And without tying up your mainframes.

The Cipher 9000 Series is a 1/2" reel-to-reel tape system that reads IBM, ICL, UNISYS, DEC and NCR compatible formats. It works with all IBM compatible 286 and 386 PC ATs and XT's.

Working with Tarsus software, the 9000 Series automatically translates data from the tape to the PC. At a speed of five megabytes a minute. Which is 100 times faster than the conventional communication lines on most networks.

Thanks to its menu driven interface and fourth generation query language, Tarsus can be mastered in a matter of hours without advanced technological expertise.

By utilizing prompts, pop-up windows and on-line help, Tarsus



guides users through the tape interrogation process. Allowing them to gather information, produce exception reports and download into databases, word processors or statistical packages such as SAS.

Tarsus also provides a direct import to other DOS applications like Lotus 1-2-3 and dBASE III.

And unlike on-line mainframe transactions, you always have control over what information is

manipulated and by whom.

Find out more about the Cipher 9000 Series and Tarsus software today. Call 1-800-4Cipher and we'll send you a free Tarsus demo diskette along with more information on the Cipher 9000 Series. It's the best way to get more out of your PCs.

And your mainframe.

cipher

See us at Comdex Booth 1816 for a free 9000/Tarsus demo diskette.

Continued from page 39
puter system.

Based on the Intel Corp. 80386 microprocessor, the Mark 386/25 operates in The Santa Cruz Operation's Xenix System V.2.3 environment and is available in both desktop and tower configurations, the vendor said. The system supports up to 64 users and offers up to 24M bytes of random-access memory. End-user pricing ranges from \$7,400 to \$17,300, depending on model and configuration.

Point 4 Data
15442 Del Amo Ave.
Tustin, Calif. 92680
714-259-0777

Applied Digital Data Systems, Inc. (ADDS) has announced an optional high-speed central processor for its Mentor 6000 Model 2 small business computer systems.

The ADDS Mentor 6000 family of multiuser computer systems is based on the NCR Corp. Tower platform and utilizes a proprietary version of the Pick operating system. The Mentor 6000 Model 2 is available with a 25-MHz CPU, the company said, and includes 32K bytes of cache memory.

Pricing for a base configuration starts at \$23,000 and includes one year's maintenance.

ADDS
100 Marcus Blvd.
Hauppauge, N.Y. 11788
516-231-5400

I/O devices

Advanced Technologies International, Inc. has introduced a 50 page/min. laser printer that offers high-speed text and graphics capability, as well as versatility through a variety of emulations.

Called the LC-6050, the printer reportedly supports a wide range of emulations including the Epson America, Inc. FX-80 and the Hewlett-Packard Co. Laserjet +/500/6000; handles simple and duplex printing jobs on a variety of paper types; and features one 500- and two 1,500-page input hoppers.

Available now, pricing on the system is \$95,000.

Advanced Technologies International
355 Sinclair-Frontage Road
Milpitas, Calif. 95035
408-942-1780

Interface Systems, Inc. has introduced a desktop dot matrix printer for IBM 3270 users, which is said to be compatible with IBM's 3268 and 3287 printer models.

Model 7268 prints draft output at 400 char./sec. and near-letter quality at 100 char./sec. with spacing of 10, 12 or 16.67 char./in., according to the company.

Users can print bar codes and oversize characters without using special software. According

to the vendor, the printer connects directly to IBM 3174 or 3274 controllers via its coaxial port and to IBM Personal Computers and other systems through an RS-232C serial port.

Pricing on the system is \$3,950 per unit.

Interface Systems
5885 Interface Drive
Ann Arbor, Mich. 48103
313-769-5900

Verastec, a unit of Xerox Corp.'s Engineering Systems division, has announced a high-resolution laser plotter capable of accepting as many as six media types.

In addition to standard media such as opaque board, vellum and translucent paper, the Verastec 8836-II laser plotter reportedly draws on double-matte film, tracing paper and Image Elite presentation paper.


According to the company, the unit is especially suited for the computer-aided design and architectural drawing marketplace and is priced at \$39,900. An upgrade kit for the company's 8836 laser plotter is available for \$2,800.

Verastec
2710 Walsh Ave.
Santa Clara, Calif. 95051
800-538-6477

Sony Corporation of America has announced a color video scanner developed for computer graphics, video production, presentation graphics and image archiving applications.

The UY-T55 Flatbed Video Scanner reportedly scans color flat art to capture images in six seconds. Images can be sent to video monitors or video projectors.

Continued on page 42



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COMPUTER ASSOCIATES

Continued from page 41

for live presentations, the vendor said, and the product can interface to a wide variety of display and reproduction devices.

The scanner is priced at \$6,495 and will be available in the fourth quarter of 1989.

Seely
9 W. 37th St.
New York, N.Y. 10019
212-618-9427

Calcomp, Inc. has replaced its 5800 series color electrostatic plotting system with a family of electrostatic plotters that offer twice the total throughput and enhanced plot quality, the company said.

The new 5800 series plotters reportedly produce dry, wide-format color drawings and are especially suited for applications with complex, multilayer output. The units provide a resolution of 400 dot/in. and include a 32-bit microprocessor and 12-MHz clock.

End-user prices start at \$49,000.
Calcomp
2411 W. La Palma Ave.
Anaheim, Calif. 92801
714-831-9200

Houston Instrument has announced two pen plotters, the DMP-61 DL and the DMP-62 DL.

According to the company,

the drafting plotters feature a standard eight-page memory and LCD, as well as roll feed capabilities.

The DMP-61 DL handles 16 standard media format sizes from ANSI A to D, the vendor said, and costs \$4,995.

The DMP-62 DL accommodates 23 standard media formats from ANSI A through E and carries a list price of \$6,395.
Houston Instrument
8500 Cameron Road
Houston, Texas 77873
512-835-0900

Applied Computer Sciences, Inc. has announced a line of Hitachi-Koki hand printers that have been modified for plug compati-

bility with Wang Laboratories, Ltd. VLS and OS computer systems.

The printers are available in 1,500 and 2,000 line/min. configurations, the vendor said, and offer continuous duty cycle printing with no preventive maintenance. Suggested retail pricing for the 1,500 line/min. model is \$28,000, and the 2,000 line/min. version is priced at \$38,000.

Applied Computer Sciences
12910 Totem Lake Blvd.
Kirkland, Wash. 98034
800-525-5512

Power supplies

Electronic Specialists, Inc. has

expanded its line of computer and industrial grade AC power regulators and conditioners.

With the addition of a proprietary Isolator output design, the company reports that it is now able to provide 16 models used to accommodate most high-technology applications. Regulated output is 117 VAC plus or minus 4% for a 90 to 140 VAC, 60-Hz line input range.

According to the company, standard and optional models are available in 250, 500, 1,000, 1,500 and 2,000 W ratings.

Pricing begins at \$400.
Electronic Specialists
171 S. Main St.
Natick, Mass. 01760
800-225-4876

NEW PRODUCTS — SOFTWARE

Database management systems

CompuServe Data Technologies has announced a revised version of its fourth-generation language/relational database management system for the Digital Equipment Corp. VAX/VMS computing platform.

System 1032 Version 8 is targeted toward companies, query-based applications, the vendor said, and now includes a debugger, the Collect command, shareable procedures and increased security functions. Shielded for availability in December, first-copy licenses range from \$3,000 for a DEC Vaxstation to \$180,000 for a DEC VAX 8840.

CompuServe
1000 Massachusetts Ave.
Cambridge, Mass. 02138
617-661-9440

Wang Laboratories, Inc. and Answer Systems, a division of Sterling Software, Inc., have announced a jointly developed software package that allows Wang VS computer users to access corporate mainframe data for use on departmental-level systems.

The PACE/Answer Connection reportedly integrates Wang's Pace application development and relational database management system with Answer System's Answer/DB, a mainframe database access tool. The product permits users to directly access information residing in IBM's DB2, IMS and VSAM data files. The program is licensed at \$7,500.

Wang Laboratories
1 Industrial Ave.
Lowell, Mass. 01851
617-450-8000

Services

Price Waterhouse has signed an agreement with Software Leasing Corp. in Beverly Hills, Calif., a company offering lease on

software, software maintenance and other support services.

Software Leasing reportedly offers capital and operating leases with terms ranging from 12 to 60 months and with funding available for \$50,000 to \$5 million packages. Packages can include hardware, software, consulting, maintenance, training and support services. Custom leasing options are available.

Price Waterhouse
Applied Technology Center
P.O. Box 30004
Tampa, Fla. 33630
813-287-9200

Sungard Recovery Services has introduced a disaster recovery capability aimed at IBM's Application System/400 midrange computer system.

The AS/400 service allows users to sustain operations in the event of a data center outage, the company said. It includes immediate access to a fully equipped hot-site facility for six weeks and the availability of ready-conditioned space for an additional six months.

The initial AS/400 disaster recovery configuration will be installed at Sungard's Philadelphia facility, with additional systems to be installed for the company's Chicago and San Diego facilities.

Sungard Recovery Services
1285 Drummers Lane
Wayne, Pa. 19087
215-341-8700

Compilers

Language Processors, Inc. (LPI) has released Version 3.10 of its Fortran-77 compiler product.

The new extension reportedly includes the Complex 16 data type, optional range checking of array subscripts, full support for Unix pipes and extended input options for non-character variables. The compiler is available to run on Intel Corp. 80386-based systems under Unix and Xenix, AT&T's 386, Motorola, Inc.'s 68000 series architecture

and the reduced instruction set computing-based 88000 processor.

Pricing starts at \$995 and varies according to system configuration.
LPI
595 Concord St.
Frammingham, Mass. 01701
508-626-0006



Accucol-85 includes an interactive source debugger

Accucol, Inc. has announced that its portable Cobol compiler product is available for Digital Equipment Corp.'s entire line of VAX and reduced instruction set computing (RISC) systems.

Accucol-85 allows DEC VAX/VMS Cobol applications to be run in the DEC RISC environment, the company said. The product reportedly includes an interactive source debugger, pop-up windowing, color and line drawings. Development system pricing ranges from \$1,500 to \$12,000.
Accucol
Suite 201
7850 Silverton Ave.
San Diego, Calif. 92126
619-271-7097

Software Translations, Inc. has released Version 7.5 of its B-Tran Basic to C translator.

B-Tran translates QuickBasic Version 4.5 and Basic 6.0 to C, the firm said, and is available for machines running DOS, AT&T Unix System V, Xenix, IBM AIX, Ultrix and Digital Equipment Corp.'s VMS. It reportedly

retains the original structure and appearance of a professional C program and costs from \$499 for the Microsoft Corp. C compiler under DOS.

Software Translations
The Carriage House
28 Green St.
Newburyport, Mass. 01950
508-462-9188

Development tools

Centura Software, formerly Application Development Systems, Inc., has announced a Cobol code analyzer for software maintenance and re-engineering on IBM mainframe computers.

Navigator/MF runs under ISPF and is used to interactively analyze any OS/VS Cobol or VS Cobol II program. It allows for identification of dead code and provides the ability to find all logic paths between any two points. It extracts a program's underlying structure and reformats it into a logical view tree diagram, the firm said. Sited for December availability, it costs \$45,000.
Centura Software
6840 78th Ave. N.
Minneapolis, Minn. 55445
800-358-3048

V.I. Corp. has enhanced its family of Data Views software tools for developing graphical user interfaces.

The tools, which run on all AT&T Unix System V and Dig-

ital Equipment Corp. VAX/VMS platforms, now offer support for most revised instruction set computing-based systems, including those from Data General Corp. and Tektronix, Inc.

The software responds to data as it is changing in real time and simultaneously maintains a dialogue with the operator via graphical input techniques, the vendor said. Version 7.0 includes an object-oriented approach for hierarchical grouping of screen handling, as well as an extension for window system event handling.

The product costs \$17,700, and users with a current maintenance contract can receive an upgrade at no additional charge.
V.I. Corp.
Amherst Research Park
Amherst, Mass. 01002
413-253-3482

Utilities

Mackinney Systems has announced a software program designed to write all CICS log entries to a single VSAM file and provide on-line display and printing functions. Called CICS/Log View, the program runs under CICS in both DOS and IBM MVS environments. Help screens and program source code are provided. The product is priced at \$495 for purchase and \$195 for annual lease, and a free 30-day trial is available.

Mackinney Systems
Suite 103
2740 S. Glenstone
Springfield, Mo. 65804
417-882-8012

Recco Software, Inc. has announced the release of Version 4.5 of its Rabbit-5 High Speed Backup software for Digital Equipment Corp.'s VAX/VMS systems.

According to the company, the software offers automatic tape selection and labeling, file access and modification while backing up, and checks for user privileges and file protections prior to information display.

Licensing costs are based on Continued on page 43

Continued from page 42
the processor used and the number of nodes supported. Group 1 licenses, including DEC Microvax II, VAX 11/730 and 11/750 series systems, are priced at \$1,995. Group 5 licenses for 6000 series systems have a price of \$8,995. Educational discounts are available.

Rasco
Suite 200
2440 Research Blvd.
Rockville, Md. 20850
301-258-2620

Computer-aided software engineering

Software AG of North America, Inc. has released two integrated computer-aided software engineering (CASE) products for IBM's DB2 database management system.

The latest version of the Natural Architect Workstation front-end design tool supports the generation of diagram-driven schema specifications for IBM DB2 and other SQL-based DBMSs. Natural Construct, a model-driven application generator, reportedly generates complete DB2 systems from interactive dialogues. Both products were designed to work in conjunction with the firm's existing Natural DB2 programming data administration package.

Natural Architect Workstation is priced from \$6,000 to \$30,000, and Natural Construct is priced from \$8,000 to \$54,000.

Software AG
11190 Sunrise Valley Drive
Reston, Va. 22091
703-860-5050

Applications packages

Trax Software, Inc. has enhanced its Edward word processing software and ESS electronic spreadsheet package to offer support for XA in an IBM CICS environment, the company said.

The CICS/XA versions of Edward and ESS reportedly permit as many as 40 concurrent users under one CICS region.

A perpetual license for ESS ranges from \$9,000 to \$16,000; Edward ranges from \$6,500 to \$11,500. Pricing is dependent on CPU size.

Trax Software
10801 National Blvd.
Los Angeles, Calif. 90064
213-475-6729

Bradford Information Systems has announced that its Interactive Distribution Planning System (IDPS) for truck routing optimization is now available for IBM RT workstations.

The software application was designed for distribution network optimization and modeling, the vendor said. Features in-

clude a database with more than 4,000 cities and towns, a graphical display of routes designating optimal delivery sequence, 32 chart formats and statistical analysis capabilities.

A single copy of IDPS costs \$100 per point for the maximum size routing problem to be solved, plus \$1 for each city or town location accessed from the database.

Bradford Information Systems
6612 Lexington Road
Austin, Texas 78731
512-459-8999

Magnum Electronics Systems Co. and McDonnell Douglas Information Systems Co. have announced the Contracts Processing System, a jointly developed system that has been designed to

automate contract processing for firms working for the U.S. Department of Defense.

The product was designed to update changes to contracts as well as provide documentation for all contract phases, including the areas of pricing, traffic and shipment, billing, order entry, procurement and quality assurance.

The system is configured to

comply with Federal Acquisition Regulations requirements, and the base price is approximately \$200,000 for the initial license.

Volume discounts are available.
McDonnell Douglas
P.O. Box 6011
5701 Katella Ave.
Cypress, Calif. 90630
714-952-3709

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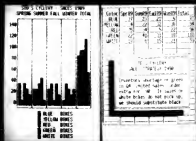
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PCs & WORKSTATIONS

MICRO BITS

Patricia Keefe

Not a very brite lite



It may be less filling, but I doubt it'll taste too great.

The so-called PM Lite is one buzzword idea, spawned by the frustrations of several software heavyweights who plain and simply bet on the wrong horse for the short term, and the worries of IBM, a whale of an industry heavyweight who fears delays in executing its long-term enterprise-wide product strategies.

The bee in these disgruntled bonnets is the fact that Windows for DOS took off—if you can say that about a product that took a total of six years to spark user and developer interest.

Users just don't hear the siren call of OS/2 that seduced the likes of IBM, Lotus, Borland and others. And that shouldn't have come as such a surprise, considering how long it has taken them to warm up to Windows. Yet it's driving these vendors bonkers.

But why should users migrate? You can say what you want about the price of memory coming down and the availability of an OS/2 desktop for \$4,000, but users I've talked to

Continued on page 53

Patch of blue in a foggy outlook: high-end PCs

ANALYSIS

BY PATRICIA KEEFE
OF STAFF

It has certainly been a down year for much of the computer industry, never mind the stock market. And there doesn't appear to be much relief in sight, except perhaps in the personal computer arena.

Much attention has been riveted on the minicomputer market of late, and the melancholy quarterly reports from big-dog makers such as IBM and Digital Equipment Corp. Meanwhile, PC growth hasn't exactly left investors whistling Dixie. But that

may be only temporary.

Sure, a recent report from Prudential-Bache Securities, Inc. predicts revenue growth will continue to spiral downward, dropping from 1989's estimated 18% revenue growth and 17% unit growth and 1988's 23% revenue growth and 22% unit growth.

Prudential-Bache analyst Kimball Brown has projected 15% revenue growth and 13% unit growth for next year. At first glance, these figures are nothing even to him about. Yet despite this sluggish performance, the PC industry should grow by \$5 billion.

Brown implied the situation

would be worse were it not for the impact of the coming onslaught of Intel Corp. 486-based computers. "We believe that the PC market is only in a lull, waiting for new 486-based PCs to be

introduced," he said.

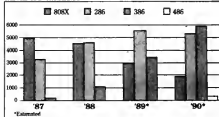
The market is under siege from a locust-like plague of 80486 product announcements, ranging from computers to

Continued on page 52

The Intel Shuffle

Just as Intel Corp. 486-based systems start to appear, the 4-year-old Intel 80386 chip will finally surpass the 80286 in 1990.

SHIPMENTS IN THOUSANDS



SOURCE: SEMI-ANALYST, PRUDENTIAL-BACHE SECURITIES

CW CHART PREPARED BY

Acer falls in step with pack of EISA, 486-based micros

BY JAMES DALY
OF STAFF

SAN JOSE, Calif. — Acer America recently joined a sprouting field of vendors offering platforms based on the Extended Industry Standard Architecture (EISA) and Intel Corp.'s 486 microprocessor with the rollout of a personal computer based on both designs.

The Acer 1200 follows by two weeks Hewlett-Packard Co.'s highly touted introduction of its Vectra 486 PC, which also employs both the EISA standard

and the 486 chip (CW, Oct. 16). The EISA standard was created by a high-profile faction of nine companies that are trying to thwart IBM's plan to set a new bus standard through its Micro Channel Architecture (MCA). Acer's box runs at 25 MHz and is capable of providing 11 million instructions per second, officials at the Taiwan company said. Additionally, the standard system memory configuration starts at 4M bytes and can be expanded to 64M bytes.

The basic 1200 system begins at \$10,995 and is scheduled

for availability in the first quarter of 1990. A file server version is scheduled for the second quarter of next year.

EISA competitor

At the same time, Acer announced an add-on multiprocessor upgrade board based on the IBM MCA which EISA is designed to compete. Acer Application Processor (AAP) reportedly can be installed in any MCA-based IBM Personal System/2 compatible built around an Intel 80386 chip.

Acer claimed that the AAP is unique in that its dual-port architecture features local memory and lets it be used as an open-architecture product. Coprocessor boards offered by competitors work only with a vendor's pro-

prietary systems.

However, Acer said the product will not be available until the second quarter of 1990 and declined to release pricing. The initial version of the board is available with multiprocessor Unix kernel software. The company said that future releases will include a multiprocessor version of The Santa Cruz Operation's SCO Unix.

Inside

- Managers can say good riddance to storage responsibilities with SMS. Page 51.
- Lotus 1-2-3-GG drops a veil in London. Page 51.
- Have yourself a merry little Mac promo. Page 54.

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FIRST LOOK

DCA's Convertible: Is It IRMA? Or Sybil?

By David Strom

Though officially dubbed the IRMA 3 Convertible, a more accurate moniker for the new multiple-personality board from Digital Communications Associates Inc. (DCA) would be Sybil. A few draft titles of the writer, and the board adopts whatever persona or configuration is needed at that moment.

The wealth of choices—three Channel or AT bus, central or twisted-pair cabling, IBM- or IRMA-style emulation—makes DCA's board an engineering marvel. At the same time, however, the AlphaBeta, Co. firm wisely borrowed some tips from its competitors. For example, it uses single application-specific chips as in Novell Inc.'s PCOK, a nifty configuration utility as in Attachmate Corp.'s board, and two items found on many products: a built-in battery for twisted-pair wiring and downloadable microcode that makes upgrading firmware less painful.

But one thing the Convertible has that all others lack is the ability to run as all current PCs—three Channel architectures (CECA), PC and AT off-line, and switching from classic bus to MCA takes over the most fumble-fingered user just a few minutes simply remove the back-edge connector. Flip a series of switches, insert the busman and so that the coax Bayonet Not Coupling connector is aligned with the rest of the card, and put everything back together.

We told several 1989 customer meetings, including DCA's own, off the top of our heads that DCA's Sybil Convertible was the only board supporting dual-channel, three Channel, and IBM and PC emulation. When the Convertible was configured as an IBM board supporting dual-channel emulation, the IBM, AlphaBeta and Sybil emulation software worked flawlessly on both machines. This included the configuration support that IBM requires.

TWO INDIVIDUAL transfer also worked well with the IBM and Attachmate products.

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Main Office Box

All that we could determine, our own...
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and 1.01 of Extrel did not...
...rectly format...

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Marketing Information Group

DCA

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All this runs for more than 3½ hours on a small, yet very powerful battery pack. Recharging is fast, and changing to a spare is easy. You can even run your PC off AC power, or from your car's cigarette lighter with an optional adapter.

So which one fits you best?

The COMPAQ LTE/286 is designed for business professionals who need extra performance



At 8½ by 11 inches, the new COMPAQ LTE/286 and COMPAQ LTE are small enough to take everywhere.

on the road. For spreadsheets and cost analyses, account profiles, as well as word processing and E-mail. It features a 12-MHz 80C286 microprocessor, a choice of a high-performance 40- or 20-MB Fixed Disk Drive and a built-in 3½-inch 1.44-MB Diskette Drive.

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COMPAQ

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S M A L L
T A L K

Douglas Barney

Spare me
the hype

In most industries, consumers rarely fall for the "new improved" labels that companies throw on things. The veteran shopper knows it's just the same old stuff in a new box that some slick marketer put a new label on.

The computer business is different. In the computer business, even the most transparent hype has an effect on a large number of customers. They believe it.

It doesn't take much to get people excited. Adding menus to an outdated program will do it. So will a new PC that is little more than a repackaged old PC.

But the strangest thing people get excited about is a faster chip that is not particularly interesting. Most reasonable people would have a hard time spending more than 30 seconds explaining what's so great about a chip that is 10% faster than its predecessor.

Vendor-hype machines believe differently. They think that announcing an extra megahertz or two is about the wildest thing that could possibly happen. All too often, the so-called opinion leaders agree.

IS doesn't buy it. They've been burned. They're being misled. And now they are taking a hard line. They buy what they want to buy and disregard the chest-pounding.

The only ones paying attention are publicity-starved analysts and consultants, vendor marketing VPs and newer, naive PC buyers.

Since IS has stopped listening...

Continued on page 54

Micros offer niche for data storage

ANALYSIS

BY RICHARD PASTORE,
CNET STAFF

System software has taken on more and more responsibility for data storage and backup in the mainframe world for years. But as personal computer networks propagate and network data systems more difficult to manage, systems managed storage (SMS) is finding a role in the microcomputer world as well.

SMS software continually monitors data files, deciding when and where they should be stored. For example, an SMS program could identify files on a hard disk that have not been touched for 90 days and transfer those files to tape.

In so doing, the program keeps the hard disk free of clutter and protects files from possible corruption. It also relieves the end user and the information systems staff from the burden of file maintenance and backup.

Though there are only a handful of dedicated SMS products available now, observers expect user demand to nudge more

players into the market in 1990. Eight to 10 storage sector firms will announce SMS products next year, according to Mike Peterson, president of Peripheral Strategies, a data storage research and consulting firm in Santa Barbara, Calif. Analysts expect few differences in functionality among these upcoming proprietary products.

Currently, the SMS market is not developed enough to support more than a handful of vendors, said Jay Bretmann, an analyst at Framingham, Mass.-based International Data Corp. But that will change as PC networks multiply and increase in size.

SMS would relieve network managers of much of the storage responsibility. "And I'm sure they'll say good riddance," Bretmann added.

The need for SMS is currently concentrated in networked PC environments, but in a couple of years, the need will migrate down to high-end stand-alone machines, analysts said.

"When you are up in the range of 60M to 80M bytes, managing the data on the hard disk becomes such a formidable

task that people don't want to attempt it," Peterson said.

Consequently, forgotten but potentially valuable files often sit among hundreds of others on the disk, at risk of corruption from viruses and other threats. SMS "would alleviate certain data losses and lost productivity from such mishaps," Bretmann said.

A keen idea

IS managers may be keen on the idea of SMS. T. Ray Lollar, vice-president of information services at Atlanta-based Gold Kist, Inc., said his firm would definitely benefit from SMS. With 500 PCs, many of them networked, managing the data "isn't an easy task," Lollar said.

One of the few changes originating Lollar's and other LAN managers' cause is Emerald Systems Corp., with its Ramp software. The family of five programs manages storage and provides both centralized and distributed backup for data on Novell, Inc. Netware PC networks.

San Diego-based Emerald, which has between 30,000 and 40,000 Ramp products installed,

last month began a crusade to establish Ramp as a standard. It is offering the software product to tape drive and PC OEMs for bundling. Emerald said it will announce its first OEM today at the Compuq Computer Corp. press event in Houston.

Analysts praised the standardization efforts, saying it will benefit users and managers of multipatform PC networks. But they are not certain a single firm can pull it off. "I don't know whether it will ever happen," Peterson said. "The economics of offering proprietary systems are working against it."

Emerald's chief rival, Marlboro, Mass.-based Sytron Corp., considers its longer established SMS products for stand-alone PCs to be the industry standard. Sytron boasts an installed base of 620,000 units and said it licenses its Sytron software for resale to 16 computer manufacturers, including Compuq and Dell Computer Corp.

The latest version of Sytron, announced last month, provides automatic backup of files to any and all tape storage devices, the company said. A network version of the software is planned for the second quarter of next year, a spokesman added.

Lotus lifts shroud around
1-2-3/G strategy, detailsBY RALPH BANCROFT
CNET STAFF

LONDON — Lotus Development Corp. chose the recent OS/2 User Show here to provide the first public peek behind the veil of secrecy shrouding 1-2-3/G, its OS/2 Presentation Manager version of its spreadsheet.

Frank King, senior vice-president of Lotus' Software Product Group, took the opportunity to highlight the product's strategic importance and demonstrate new features.

"We are showing 1-2-3/G for the first time in some detail," King said. "We have spent \$45 million on OS/2 development

work and have 150 programmers working on it. It is a major investment for us," he added.

King said the product is about to go into beta test but was wary about putting a shipment date on 1-2-3/G because of previous premature announcements.

In a dry run of the presentation that the firm is planning to make at Comdex/Fall '89 in Las Vegas next week, King also talked publicly for the first time about Notes, which allows networked users to edit, annotate and share documents.

There were rumors that the project had been effectively killed. If so, then King revived it. He confirmed that Notes is in

beta test and will be "off the vaporware list" shortly.

UK beta testers said the product is stable. However, some of these were using a Microsoft Corp. Windows-based version of Notes, whereas King spoke only of an OS/2 version.

"The impression I get is that Lotus won't actually launch Notes. Instead, they see it as a key accounts type of product and will only let you have it if they are satisfied that you really need it and can support it," one beta tester said.

King dubbed 1-2-3/G's "solving" technology its most exciting new feature. A feature called Back Solver reverses the usual what of calculation.

The solving technology is an equation-based background task that runs as a separate thread. If one of the constraints is changed, the Back Solver will

automatically recalculate the worksheet.

Lotus 1-2-3/G will fully exploit all the features of Presentation Manager. But while it uses



Lotus' King extolled 1-2-3/G's virtues at public demonstration.

PM's graphical user interface, it is implemented so that it will not require extensive retraining. All existing 1-2-3 commands will work with 1-2-3/G.



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PC outlook

FROM PAGE 47

cards, featuring either Micro Channel Architecture (MCA) or Extended Industry Standard Architecture (EISA) bus standards. The wave of introductions will reach its apex at next week's Comdex/Fall '89 trade show in Las Vegas.

The way Brown explains it, the primary driver of PC demand is better price/performance. "We expect the December quarter to usher in increased performance and lower prices, [thanks to] the new 486-based PCs."

Prudential-Bache divides the PC market into two sectors: the low-end, price-sensitive segment and the high-end, feature/function segment.

Brown predicted that 486-based PCs will have the dual effect of providing high-margin functionality to the high end, while forcing price cuts to the current offering.

This has already happened in earlier generations, particularly with the arrival of Intel's 80386SX chip, which touched off a price war in the 286 market this summer.

Signs of a repeat in the 386 market are already appearing. The current price-sensitive market has moved up to 20-MHz 386-based PCs, Brown said.

Advanced Logic Research, Inc. (ALR) in Irvine, Calif., is one example. ALR announced its 486 product plans two months ago; last week it lowered prices by as much as 21% on its 10-member line of 25-MHz and 33-

MHz 386-based Flexcache systems. Dave Kirkley, ALR's vice-president of sales, attributed the reductions to the new 1486 products and recent cost savings on random-access memory.

"Today's action will no doubt put pressure on the competition," he predicted, also claiming that ALR's 25-MHz and 33-MHz 386 products are now up to 36% less expensive than comparable Compaq Computer Corp. Desktop models.

The impact of price cuts such as these will be to jump-start the price-sensitive segment of the market, hence boosting unit sales, Brown said.

A secondary driver of PC demand will be the availability of new applications that make PCs more useful, for example, programs that take advantage of Microsoft Corp. Windows, OS/2 and Presentation Manager. So far, introductions in these areas have been meager, but the pace is expected to pick up in the next three to six months.

Brown forecasted another two years of waiting before OS/2 matures. In the meantime, Windows software will pick up the slack. "In 1991 we expect OS/2 to stabilize and attract industry-wide applications and user support. Until then, it appears that developers are increasingly stepping up MS Windows applications development and putting OS/2 development on the back burner."

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Tool makes printers plot

BY RICHARD PASTORE
CW USAFF

EMERYVILLE, Calif. — If you can't put up with the plodding pace of a plotter, use a printer instead. Such is the advice of Insight Development Corp., which released a version of its plotter emulator package for use with both Digital Equipment Corp. LJ250 and LJ252 ink-jet printers.

The Printplot program allows the DEC printers to emulate a conventional pen plotter but at 10 times the speed, according to Doug Cole, executive vice-president of the Emeryville-based company.

Earlier versions of the product support all HP ink-jet and laser printers and compatibles as well as popular dot-matrix printer models.

"What might take an hour on a plotter you can do on a laser printer in seconds and on an ink-jet printer in minutes," Cole said.

Printplot for the DEC LJ250 and LJ252 is available through both DEC and Insight Development. It carries a price tag of \$199.

Keefe

CONTINUED FROM PAGE 47

are gagging on the idea of 8M to 10M bytes per desktop. Not only that, they want to preserve their installed base of hardware and software. OS/2 Standard Edition 2.1 offers users a slight break on memory with an expanded DOS compatibility box, but it's not enough.

OS/2 is just too darn big. Certainly, there are users with a need for OS/2, but they tend to be the minority or the pilot project in an enterprise otherwise moving to Windows.

Meanwhile, millions of dollars in development work is starting to pile up in your back room. What to do, what to do.

Well, first you start publicly. Then, you could concoct an idea like PM Lite and leak it to the press to see how it plays with the PC community (I'll bet anything IBM has gotten a stinging earful). Or, you could just whip out your printing shears and cut OS/2 back into some semblance of a manageable environment.

The gist of PM Lite is that you'd take a subset of the bulked-up OS/2 graphical interface and run it under DOS. So what does that buy you? Allegedly, multitasking. A lot of the developers I've talked to are highly skeptical. DOS is a single-user, single-tasking operating system. The point of OS/2 was to move to a multitasking, multiuser environment.

You'll also get the ability to run your DOS application unmodified. Gee, that's quite a concession considering the nature environment is DOS.

Supposedly, we'll also get an easier migration path to OS/2 because developers will write one application that will run under DOS or OS/2. This is good news for developers who went with PM. It means they can tweak their PM software to run under Windows, thereby shortening the competition's lead time. And since many PM packages reportedly only utilize the common set of PM program calls, they'll allegedly fit under PM Lite. Or so I'm told.

MICRO BITS

Type Director deal offered

Aldas Corp. is now packing discount coupons for Hewlett-Packard Co.'s Type Director, a font scaling and management program, in MS-DOS versions of Aldas Pagemaker 3.0. The coupon entitles customers to purchase Type Director and eight scalable typefaces for \$39.95.

The first Borland International Paradox Users conference is slated for April 29 to May 2 at the Monterey (Calif.) Convention Center. The agenda will cover issues of interest to developers and users, while industry luminaries and senior Borland executives will discuss the future of database technology. Call 800-544-4569 for information.

Soft Warehouse, a computer retailer, and Intel Corp. have launched a nationwide on-site service and support program for IBM-compatible personal computers. Flexible On-Site Computer User Support (Focus) is available to anyone who buys a PC from the retailer.

I have trouble buying that. First off, adding a selection of programming calls and the ability to multitask can't help but suck up memory, putting pressure on the applications. Second, anyone who ports a DOS application to OS/2 is doing so presumably to take advantage of what OS/2 has to offer. The result should be a far richer product. It seems to me, and to some developers, that you would have to cripple your PM application to get it to run under PM Lite. There, it would be trapped in this never-server land of more than DOS but not quite OS/2. In these cases, users would not be spared buying a second version of their software.

Nor would users be spared the confusion that allegedly has kept them from buying OS/2 PM (but obviously not Win-

dows). One school of thought has it that users are not migrating to OS/2 PM because they are confused by Windows (or maybe they just know what they need.)

Of course, if they are confused, or merely just divided internally into warring camps, a third, bladed interface that is neither here (DOS) nor there (OS/2) is not going to ease anyone's decision-making process.

Still, there's a germ of common sense here, and Microsoft's Senior Vice-President, and Microsoft, Steve Ballmer, who has Windows 3.0 to think about, has admitted as much.

Now, you might be wondering whether it wouldn't just be simpler to look at why people won't go to OS/2, and just address those issues. Right off the bat,

you hit size. According to Ballmer, who declined to say whether IBM has discussed PM Lite with Microsoft, the two have tossed around the idea of slimming down OS/2 itself.

I should hope so. Fact is, each version of OS/2 is getting progressively smaller, according to Ballmer. But Microsoft and IBM need to dramatically whip their pudgy prodigy into shape. And they need to do it together, as a team. If they don't, an OS/2 standard is jeopardized, and then where are all those PM developers? They might do well to heed the following admonishment: Be careful what you wish for; you might get it.

Keefe is a Computerworld senior editor, PCs and workstations.

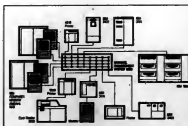
IT'S NOT CLEAR WHO MAKES THE SECOND-BEST CHANNEL MANAGEMENT SYSTEM.

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Dynatech Communications 591 Annapolis Way Woodbridge, VA 22191 Phone (703)550-0011

Barney

CONTINUED FROM PAGE 51

ing, vendors should nip this ceaseless stream of performance announcements in the bud. They should instead start working on products that exploit additional power and make their more expensive wares worth buying.

So far, the only group that has truly used the full potential of faster PCs is IS itself. These are the people who dump Amdahl and IBM big iron and put the same applications on PCs. These are the people who tie users more effectively to networks and who save mainframe cycles by giving programmers PCs equipped with a new breed of truly robust lan-

guage tools.

So where are the productivity software vendors? What have they done to harness the power of a \$10,000 33-MHz Intel 80386 with 32-bit addressing, burst mode, etc., etc.? Not too much.

Look around your company. Look at an old IBM PC XT that has been lying around for years and look at its hard disk directory. You're likely to find Dbase III, Lotus 1-2-3 Release 2.01 and maybe Multimate or Wordstar.

Then search the directory of that snazzy 80386 used by one of the top accountants. Hmm. It comes up pretty fast. Look. There's Lotus 1-2-3 Release 2.01. And a little further down, Dbase III. Just below that is PFS: Write. Now there's some exciting stuff!

Whatever happened to the idea of breakthrough products, instead of me-too products? How about a spreadsheet that doesn't intimidate the novice or leave the professional number-cruncher lost in a sea of figures?

With double-digit MIPS and large amounts of memory, it should be easy to run a spreadsheet with an expert system front end that helps lay out rows, plug in formulas and generate balance sheets, income statements and departmental reports.

With that kind of power, it should be easy for someone to run a word processor that suggests a new paragraph, or sentence, when someone runs on and on and on . . .

Instead, all we get are menus, menus

WHATEVER happened to the idea of breakthrough products, instead of me-too products? How about a spreadsheet that doesn't intimidate the novice, or leave the professional number-cruncher lost in a sea of figures?

and more menus. How about some intelligence?

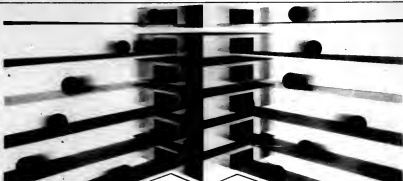
Since the excitement level of new chip announcements has fallen, vendors have started to get desperate. And when they get desperate, they become even more manipulative.

For example, profit-hungry suppliers now have the gall to tell us that a 386 machine is the entry-level machine. If you don't have at least a 386, you ain't worth a darn.

This sounds a wee bit hollow coming from an industry that has failed to create software products good enough to replace old, intimidating and awkward corporate standards.

It is time to put creativity back into software design. It is also time to turn off the hype machines for a while and generate products worthy of a 33-MHz chip. And maybe, just maybe, this will help the vendors regain some of their long-lost credibility.

Barney is editor in chief of *Average World*.



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Apple launches promo season

CUPERTINO, Calif. — April showers bring May flowers, but the year-end holiday season typically brings price cuts and promotions.

Apple Computer, Inc. has unwrapped a somewhat tricky holiday promotion built around the following systems: the Apple IIGS, Macintosh Plus, SE, SE/30 and the IIGX.

Customers can opt for the free trial run or grab between \$150 and \$300 in cash rebates on purchases of qualifying peripherals when buying any of the systems. Purchasers of multiple systems will receive a rebate on each qualifying purchase.

Customers who meet Apple financing criteria can undertake one free trial on qualifying systems until Dec. 31. Those systems must be returned between Jan. 1 and 15. Up \$100 off the sticker price if the system is bought before Dec. 31 but still the rebate on peripherals. Got it that?

Also, more than 70 software developers are participating in the promotion through direct money-back offers on more than 100 packages when purchased by participants in the Free Trial Run program. Qualifying software falls into five categories: analyze and plan; design and illustrate; write; present and publish; connect; and learn and play.

If customers decide to buy the trial system, the software must be kept. If the system is returned, the software can be purchased or returned to the developers.

**A few words
about the one
piece of software
that could kill
your company.**

NEW PRODUCTS

Systems

Easdata Computer Products has introduced three models to its line of systems.

The products are 33- and 25-MHz Intel Corp. 80386-based systems and a 16-MHz 286 sys-

tem. The 16-MHz system costs \$1,124, and the 25-MHz and 33-MHz systems are \$4,460 and \$5,500, respectively.

Easdata
301 Ravendale Drive
Mountain View, Calif.
94043
415-968-3400

Prime Computer, Inc. has announced three workstations based on Sun Microsystems, Inc. Scalable Processor Architecture.

The company lists the models as the WS42C, a 12.5-million-instruction per second (MIPS) desktop station, the WS40C, a 1.0-MIPS desksize station, and the WS45S, a 16-MIPS server. Pricing is from \$22,660 for the

WS40C, \$89,900 for the WS42C and \$62,800 for the WS45S.

Prime
Prime Pkwy.
Natick, Mass. 01760
508-655-8000

Sirex, Inc. has introduced an Intel Corp. 80386-based 20-MHz workstation.

According to the vendor, the Workmaster has a six-layer

80386 motherboard that includes zero- and one-wait state, an Intel Corp. double sigma 32-bit 80386-20 CPU, 80387 and 80287 math coprocessor sockets and 1M byte of random-access memory, expandable to 8M bytes. The system is said to be compatible with MS-DOS, OS/2. The Santa Cruz Operation's Xenix, AT&T Unix V/386 and Pick operating environments.

The Workmaster 386-20 costs \$1,295.

Sirex
132-14 11th Ave.
College Point, N.Y. 11356
800-722-0404

AST Research, Inc. has announced a 16-MHz Intel Corp. 80386SX-based computer system designed to allow upgrading to an Intel i486 processor.

The system uses AST's Completely Universal Processor, i40 Design (CUPID-32) architecture, which allows component upgrades without making the computer obsolete.

The price for the Model 3V with a 3V-in floppy or the Model 5V with a 5V-in floppy is \$2,695. The Model 45V includes a 40M-byte AT-embedded hard drive and costs \$3,595.

AST
2121 Alton Avenue
Irvine, Calif. 92714
714-863-1333

Queme Corp. has announced price cuts on selected models of its QVT terminal product line.

Prices on models QVT 119 Plus and QVT 203 Plus have been reduced by about 11% and 16%, respectively. The lower price for both models is \$499.

Queme
500 Yosemite Drive
Milpitas, Calif. 95035
408-942-4000

Agilis Corp. has announced a family of handheld, modular workstations for mobile network computing.

The workstations support MS-DOS, UNIX and MS-OS/2 operating software.

Pricing ranges from \$2,000 to \$20,000.

Agilis
1101 San Antonio Road
Mountain View, Calif.
94043-1008
415-962-9400

Epson America, Inc. has introduced an IBM Personal Computer AT-compatible desktop PC.

The Equity IIE is an Intel Corp. 80286-based system that operates at 8 or 12 MHz and comes with 1M byte of random-access memory.

Pricing begins at \$1,799 for a single 5V-in floppy drive configuration. A single floppy/40M-byte hard drive system costs \$2,699 retail.

Epson
23530 Hawthorne Blvd.
Torrance, Calif. 90505
213-539-9140



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end to the expense and difficulty of manually archiving and retrieving printed listings. You get convenient online **STRESS** control in a system that quickly pays for itself by greatly reducing printing, paper, storage and labor costs.

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BETA 93 ensures that the right reports reach the right users at the right time. **BETA 93** automates the separation, packaging, distribution and archival of all your production reports. **BETA 93** offers a comprehensive solution to the labor-intensive problems in post-production: the printing,

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- ☐ **BETA 93** Report Distribution and Print Management System
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Finland (+358-0) 624-266

Got it?!



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scores like you wouldn't believe blah blah blah
everybody's information management needs from
you down to the janitor blah blah blah blah
blah blah blah thousands of consultants 24 hours
a day for the rest of your life blah blah blah
blah blah technical gibberish blah blah
blah blah vaporous promises blah blah
blah custom tailored to fit everybody blah
blah relational database
blah the computing environment that
redefines the 21st century blah blah
blah post-state-of-the-art blah blah
nanosecond response times blah blah
runs on every platform in the known universe
blah all's fair as long as you're not
outright lying blah
blah*

Enough.

Flatulent rhetoric and misleading tech-talk are not exactly a good basis for decision-making. Especially not when the subject is relational databases. The next time you see an ad from

Ingres, you'll finally see an alternative to gibberish, vapor and blah. Namely, real information about a more intelligent way to run your business. The Ingres Relational Database System. Stay tuned.

Ingres

© 1989 Ingres Corporation

Software applications packages

Adobe Systems, Inc. has announced an automated graphics production software package with windowing capabilities for IBM Personal Computers and compatibles.

Adobe Streamline-Windows Version automatically traces bit-mapped images and converts them into Adobe Postscript-language artwork. The artwork can then be used as is, modified or exported for use in page layout or word processing programs.

The product requires an Intel Corp. 80286- or 80386-based machine with a minimum of 640K bytes of conventional memory. It carries a recommended retail price of \$395.

**Adobe Systems
P.O. Box 7900
1585 Charleston Road
Mountain View, Calif.
94039**

415-961-4400

Automated Reasoning Technologies, Inc. has released a personal finances management program for users of Lotus Development Corp.'s 1-2-3.

Personal Finances with 1-2-3 Release 3.0 reportedly matches personal checking accounts and analyses budgets, real estate investments, stocks, bonds, options and savings using Release 3.0's multiple worksheets and three-dimensional graphs.

The program is said to provide sample data so that users can see how the program is going to work before entering their own data.

Available for Releases 1A, 2.01 and 3.0 of 1-2-3, the software sells for \$99.

**Automated Reasoning Technologies
Suite 618
975 Oak St.
Eugene, Ore. 97401
503-345-9030**

Idea Works, Inc. has introduced a statistical software package that is said to help researchers select the right statistic for analysis problems.

Version 1.1 of **Statistical Navigator** reportedly uses artificial intelligence strategies to scrutinize and compare options based on users' needs and help them correctly analyze data. According to the company, the program provides detailed justification for recommendations, prints written reports, warns the user about relevant controversies and performs sensitivity analyses.

For use on the IBM Personal Computer or compatibles, the price is \$99.95 plus \$5 for shipping and handling charges.

**Idea Works
100 West Briarwood
Columbia, Mo. 65203
314-445-4554**

Applied Computer Solutions, Inc. has announced an edition of its three-dimensional VSA tolerance analysis software for users of IBM's Personal Computer, PC AT, Personal System/2 and compatibles.

The VSA/PC package includes the features of the full VSA program except for certain advanced statistical routines, advanced modeling libraries and the ability to handle very large models. According to the company, the program contains a user interface that allows the entire model creation, analysis and report-generation process to be performed graphically using a mouse and pop-up menus.

The price of the VSA/PC edition is \$750, compared with the full VSA price of \$5,000.

**Applied Computer Solutions
300 Maple Park Blvd. #301
St. Clair Shores, Mich.
48080**

313-774-2640

Datad, Inc. has introduced a professional reference handler for the IBM Personal Computer, PC AT and compatibles.

Get-A-Ref is a tool for users who must access and update personal libraries of references and notes.

Since the software is random-access memory-resident, the user can access information while working in a word processor, Datad said. The reference files are in ASCII format and may contain references with up to 16,000 characters of text each.

The price is \$250, with discounts available.

**Datad
P.O. Box 8665
Madison, Wis. 53708-8665
608-256-7767**



Graphic's PC-Xview/16 displays multiple applications

Graphic Software Systems, Inc. (GSS) has announced an Intel Corp. 80286 protected-mode version of its DOS-based **PC-Xview X Window System** server.

PC-Xview/16 displays multiple hard-based applications while using local PC memory to run the applications' graphics and window functions. By supporting the 286's protected memory, **PC-Xview/16** can support 16M bytes of memory.

The package costs \$295.

**GSS
P.O. Box 4900
9590 SW Gemini Drive
Beaverton, Ore. 97005
503-641-2200**

A graphics package for creating Gantt and milestone planning charts has been announced by Softpro.

Milestones, Etc. reportedly runs on IBM and compatible machines under the Microsoft Corp. Windows operating environment. The graphics tool is said to include 28 symbol types in five sizes, 15 connector types used to connect symbols on the chart and a current date-sensitive option to provide for ease in maintenance. According to Softpro, other features include three levels of date headings, multiple page chart capabilities and flexible chart layout.

The price is \$89.

**Softpro
P.O. Box 1167
Manhasset, Texas 78652
800-666-3886**

The **Center for Project Management** has introduced a software package designed to automate project scheduling in a personal computer environment.

The company says **Project-base** is a life-cycle-based planning and estimating system designed to help individuals develop comprehensive project plans and estimates. The plan can then be exported to scheduling and tracking software.

The licensing fee for the system is \$2,950.

**Center for Project Management
Suite 290
18 Crow Canyon Court
San Ramon, Calif. 94583
415-837-0397**

Software designed to assist corporate real estate managers who are responsible for multiple office or retail locations has been announced by **Classic Software Development, Inc.**

According to the company, the **Lease Manager** consists of six modules and provides several levels of lease cataloging and retrieval functions. Applications include accounts receivable and billings, check request and report writer facilities. Yearly updates of the program are available from the vendor.

A single-user version sells for \$3,495.

**Classic Software
Suite 205
3200 Highlands Pkwy.
Smyrna, Ga. 30082
404-438-2088**

Brightbill-Roberts & Co. has upgraded its desktop screen show software for IBM Personal Computers, Personal System/2s and compatible machines.

Show Partner/FX 3.5 reportedly includes enhanced interactive and animation capabilities as well as additional clip art material.

The product also incorporates the GX2 image file format, which offers compatibility with

Lotus Development Corp.'s Freelance Plan 3.0 presentation graphics program.

Version 3.5 is priced at \$395, and registered users can upgrade for \$89.

**Brightbill-Roberts
Suite 421
120 E. Washington St.
Syracuse, N.Y. 13202
315-474-3400**



Easysoft's DOS partner is aimed at novices

Easysoft's DOS partner is aimed at novices

Software utilities

An integrated application, file- and drive-management program that automates add replaces DOS commands has been introduced by **Easysoft, Inc.**

Aimed at the novice or non-power user, **DOS Partner** does not require users to have previous knowledge of DOS or DOS syntax, the vendor said. The program runs applications and names, formats and copies floppy disks automatically. It also provides statistics on entire disk drives and can be customized to meet specific user needs.

DOS Partner costs \$99.

**Easysoft
Suite B100
1215 Hightower Trail
Atlanta, Ga. 30350
404-892-4140**

Trio Systems has introduced a C language library for Microsoft Corp. Windows, OS/2 and MS-DOS database applications.

C-Index/PC reportedly will support single and multiuser applications and can be adapted for use with any PC compiler and operating system running on an Intel Corp. microprocessor.

The package costs \$195.

**Trio Systems
Suite 531
953 E. Colorado Blvd.
Pasadena, Calif. 91106
818-798-5567**

QMS, Inc. has announced color printing capabilities on its Ultra-script personal computer interpreter for Adobe Systems, Inc. Postscript.

Ultra-script PC will create Postscript-compatible files on Intel Corp. 80286- or 80386-based IBM Personal Computer compatibles.

Ultra-script PC is available with 25 typefaces for a list price of \$195. **Ultra-script PC Plus**, with 47 typefaces, costs \$445.

**QMS
One Magnus Pass
Mobile, Ala. 36618
205-633-4300**

Macintosh products

Bear Rock Software Co. has introduced a set of bar code fonts for the Apple Computer, Inc. Macintosh computer.

Calles Printer, the product includes Code 39, Interleaved 2 of 5, UPC and other bar code fonts that enable the Macintosh to print bar codes on an Apple Imagewriter, Apple Laserwriter and several Linotronic high-resolution printers.

Printer costs \$395, which includes a user's manual and free telephone support.

**Bear Rock Software
6069 Enterprise Drive
Diamond Springs, Calif.
95619
916-622-4640**

A software product that converts IBM and other graphics file formats into Apple Computer, Inc. Macintosh computer PICT files has been announced by **FGM, Inc.**

Picture This can be used as either a desk accessory or a separate application according to **FGM**. Converts, files can be used as-is for display purposes, or they can be edited like any other PICT file.

Picture This is priced at \$99.

**FGM
Suite 108
131 Elden St.
Hendron, Va. 22070
703-478-9881**

Tektronics, Inc. has introduced a color fidelity system that optimizes color matching to printers.

Tekcolor, for use with Apple Computer, Inc. Macintosh systems, was developed to aid users in picking screen colors for duplicate reproduction on their output devices, the company said. The product includes a color selection and editing interface and carries a suggested retail price of \$55.

**Tektronics
P.O. Box 1000
M-63-020
Wilsonville, Ore. 97070
800-835-6100**

A product that will reportedly allow Apple Computer, Inc. Macintosh Portable users to use DOS software has been announced by **Insignia Solutions, Inc.**

SoftPC will enable non-Intel Corp.-based PCs to run MS-DOS-based software by emulating an IBM Personal Computer XT. **SoftPC** will also allow users to paste text from PC programs to Macintosh applications and store both DOS and Macintosh files on a hard disk.

The suggested retail price of **SoftPC** is \$399.

**Insignia
254 San Geronimo Way
Sunnyvale, Calif. 94086
408-522-7600**

**Welcome
to the
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AT&T

Network Systems

Peripherals

Summagraphics Corp. has unveiled a 12- by 12-in. tablet targeted toward computer-aided design and graphics professionals.

The Summagraphics II 12x12 is available in two configurations. A four-button cursor, two-button stylus version is priced at

\$599; a 16-button cursor configuration is available for \$699. According to the vendor, the product is compatible with most computer-aided design software packages and includes a Microsoft Corp. Windows software driver.

Summagraphics
60 Silvermine Road
Seymour, Conn. 06483
203-681-5400

Polaroid Corp. has announced the availability of Lotus Development Corp. software drivers for users who use the Polaroid Paletteplus Computer Image Recorder.

According to the company, the drivers work with Lotus Freelance Plus Versions 2.0 and 3.0, and Graphwriter II Version 1.0.

The Paletteplus recorder de-

livers full-color instant prints, slides and overheads from IBM Personal Computers and compatibles equipped with Enhanced Graphics Adapter boards.

The suggested list price of the Paletteplus Computer Image Recorder is \$2,999. Polaroid
575 Technology Square
Cambridge, Mass. 02139
617-577-2000

A 15-in. diagonal, stand-alone plasma display monitor is now available from Fujitsu Component of America, Inc. Designated the FPF12000S, the unit is aimed at desktop publishing, computer-aided manufacturing and other graphics-intensive markets. The monitor has a reported 1024 by 768 dot/in. resolution, weighs approximately four pounds, and is priced at \$5,000 in single-unit quantities. Fujitsu Component
3330 Scott Blvd.
Santa Clara, Calif. 95054
408-562-1000

Board-level devices

Raritan Computer, Inc. has announced several memory boards developed for the IBM Personal Computer AT and 16-bit compatibles as well as the IBM Personal System/2.

The RCAT84 and the RCAT88 provide 4M and 6M bytes of random-access memory, respectively, and operate in systems at speeds up to 33 MHz, the vendor said. The 2M-byte RC5020 and the 4M-byte RC5040 also use high-speed 1M-byte chips and were designed for the IBM Personal System/4 Models 50, 50Z and 60.

The boards are priced from \$500 to \$1,500. Discounts are available with single orders of 10 or more.

Raritan Computer
Suite 1
10 Bessie Court
Bellevue, N.J. 08502
201-674-4072

Trans-M Corp. has announced the release of its HPB RS485 SDLC communication board.

The HPB RS485 SDLC is a general-purpose communications-, data-acquisition- and control system that runs on IBM Personal Computer XT's and Intel Corp. 80286- and 80386-based machines. It reportedly provides synchronous communications at 250K bit/sec. over a distance of about 4,000 ft.

The price is \$345 per unit. Trans-M
26 Blacksmith Drive
Medford, Mass. 02025
508-359-5144

Monolithic Systems Corp. has introduced its monolithic 16/25-MHz Microframe 386M motherboard.

Designed to give users an alternative to Intel Corp. 80386-based cached motherboards, the product has eight expansion slots on a baby-AT form factor, the vendor said. The board addresses up to 16M bytes of 32-bit, zero wait-state memory and is priced from \$1,133 to \$1,427, depending on model and options. Monolithic Systems
7050 S. Tucuman Way
Englewood, Colo. 80112
303-790-7400

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NETWORKING

DATA STREAM

Howard Cravis

Sizing up a network

Emerging technology and changing economies mandate that communications networks be re-evaluated — and re-optimized — every two or three years. How does one go about sizing a new or evolving network?

There are many excellent tools embodied in PC or miniframe programs to help the data network designer size a network. By "sizing" we mean estimating the speed and number of communications circuits needed to ensure good performance; sometimes we must also decide on connectivity issues, as in the case of a multi-point circuit.

Good performance means conformance with a criterion, such as "in 90% of transactions, response time shall be no more than two seconds." The criteria should consider the cost vs. performance trade-off.

Continued on page 72

Inside

- New net fuels pace at Churchill Truck. Page 66.
- DEC's LAN Bridge update makes way for FDDI. Page 71.
- Bell Atlantic tempts users with ISDN debit. Page 71.

HP/Apollo lights product fire

Apollo's Series 10000 powered up; HP Advance users gain new access

BY PATRICIA KEEFE
CW STAFF

The combined entities of Hewlett-Packard Co. and subsidiary Apollo Computer recently unleashed a product blitz designed to boost the power of Apollo's Series 10000 and expand network access for HP's Advance net users.

The introductions included the following products and plans:
• Available in January, HP's Team Computing Program combines Apollo's Network Computing System, X Window System and the Motif interface, which was developed by HP and Digital Equipment Corp. for the Open

Software Foundation.

- Systems enhancements for the Apollo Series 10000, including a reduced instruction set computing (RISC) chip said to double the system's power.
- Network-controller boards based on the emerging Fiber Distributed Data Interface (FDDI) standard and related Station Management software slated for delivery in April.
- The HP 700/X family of X Window System network-based graphics terminals.

Team up for power

The concept behind Team Computing is to allow users to more fully utilize the processing power

of every computer on multivenor networks via cooperative processing. The key is Task Broker, software said to use an intelligent bidding process to distribute entire tasks to the computer best suited for each job. It runs on any Unix computer and uses Transmission Control Protocol/Internet Protocol. HP is developing a version to run on DEC and Sun Microsystems, Inc. platforms.

Also included are NCS for HP Unix workstations, NCS-based system administration applications and a preconfigured X Window environment using Motif.

Over the next year, every major component of the minisuper-

computer-class, multiprocessing Series 10000 will receive a substantial upgrade, HP said. These will include a new RISC chip; a parallelizing and vectorizing compiler to increase system performance by two to four times; a fourfold increase in main memory capacity; a sixfold increase in disk capacity; and a tenfold boost in local-area network bandwidth.

Priced at nearly half the cost of an HP desktop workstation, the 700/X can run in a multivenor networked environment. It is said to provide graphics and LAN performance equivalent to an entry-level workstation configured as an X Server.

Apollo will produce the FDDI boards, which will initially support the Series 10000. They will be used to connect high-performance workstations to FDDI's 100M b/sec. bandwidth.

Booz taps tight labor pool with LAN database

ON SITE

BY MITCH BETTS
CW STAFF

BETHESDA, Md. — Personnel departments in corporate America are under increasing pressure not only to hire technical specialists in a tight labor market but also to account for how they spend their money.

That is certainly the case at Booz-Allen & Hamilton, Inc., a high-tech professional services firm that is competing with systems integrators and consulting

firms for technical talent, according to Cynthia J. Millon, manager of personnel administration for the firm's information technology center.

Millon said she is relying on an employment database management system running on a local-area network of personal computers to help maintain a competitive edge as a recruiter and generate management reports.

For example, the system allows Millon to track the progress of resumes through the hiring process, identify which



Booz-Allen's Millon tracks resumes through hiring process on LAN-based DBMS

newspaper advertisements generate the greatest number of qualified applicants, monitor the productivity of individual recruiters and compile statistics on minority hiring and the cost-per-

hire. "It puts a lot of financial information at our fingertips, as opposed to going through the [company's less-accessible] accounting mainframe system."

Continued on page 70

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Creating value

AT&T eases doubts with planned enhancements

BY JOANNE M. WEXLER
OF STAFF

DALLAS — AT&T recently sought to assuage any lingering fears that its Information Systems Network (ISN) might fade into oblivion and leave users in the lurch.

At the Network Users Group of AT&T (NUGATT) meeting, held here last month, the company announced plans to enhance ISN in 1990. ISN is designed to serve as an asynchronous wide-area network (WAN) in a campus or building environment. The plans include an upgrade to the network's main Intel Corp. processor and enhanced system management capabilities for improved administration, maintenance and reports.

In making the announcement, Roy Eberle, AT&T's director of systems marketing, said, "You've told us that ISN is very important to you, that you want additional ISN management capabilities and that you want to protect your investments."

His comments referred to user voices raised at past NUGATT meetings. ISN users became angry when the company introduced a version of its latest kit Virtual Circuit Switch, originally designed for central offices, to the commercial market last March. Details II is a high-speed backbone switch targeted to synchronous large-scale WANs.

Users had expressed concern at May's NUGATT meeting

in order to get Details functionality, they would have to upgrade to the larger, more expensive switch. Users were not specifically opposed to AT&T's holding ISN into Details II, as long as the company retained a low-cost, entry-level version meeting with what ISN had to offer. Otherwise, they asserted, smaller users would have a big bridge to gap in moving up to the Details II offering.

Overall, last month's NUGATT attendees expressed satisfaction with their ISN, Details II and Starlan networks, as well as with AT&T responsiveness to their concerns.

Suggestions from users included a rethinking of AT&T's prioritization criteria for responding to network outages. Users said the current priority system, which gives attention first to networks that are completely "down," is less than ideal. One user pointed out, for example, that networks not functioning as intended should also be given a high priority.

Joel Appelbaum, AT&T vice-president of technical service and support, said part of the problem is the different people who support the premise and postable network. We're going to reorganize that."

Another user requested that AT&T bring the crash kit and spare parts database up to date for ISN. Appelbaum said, "AT&T hasn't done all that it can to meet your needs; the tools haven't been adequate."

Cylix keeps Churchill truckin'

ON SITE

BY JOANNE M. WEXLER
OF STAFF

CHILLICOTHE, Mo. — With today's demands for quick turnaround, a company's success can hinge on a few seconds of computer response time. So when response on Churchill Truck Lines' nationwide terrestrial data network became sluggish because of corporate growth, the company knew it had to act fast.

Churchill decided to replace its multipoint AT&T network with one that combines satellite and terrestrial facilities. Under a \$2 million agreement signed in September, the company contracted with Cylix Communications Corp. for 56K bit/sec. C-band satellite circuits, earth stations, 9.6K bit/sec. modems and network management services.

The network, which Churchill said is faster and more reliable, became operational two weeks ago. Churchill anticipates bottom-line productivity and cost benefits through greater network availability, according to Harold Atkins, corporate secretary. It also speeds up the process of obtaining rate quotes for customers.

The network carries information about equipment, shipping, tracking and billing among 81 trucking locations in 25 states. Users transmit and receive data to and from their nearest private earth station via a local telephone line, and the network's 22 earth stations communicate with one another over the satellite circuits.

In an era in which users tend to maintain control of their own

networks, Churchill has turned the line completely over to Cylix. The vendor's diagnostic equipment in its network control center allows Cylix to detect an outage on a link between a Churchill host and Cylix concentrator within one minute, according to the vendor.

Cylix uses a proprietary network management system with a gateway into IBM's Netview to manage its customers' networks, according to Tom Mar-



gan, Cylix vice-president of sales and marketing.

Mangan claimed Cylix is particularly suited for managing networks of companies in the transportation industry, which tend to be in business 24 hours a day, seven days a week. Cylix keeps its maintenance window to about one hour at 2 a.m. on Sundays so as to have the least possible impact on a customer's business.

An IBM 4381 mainframe in Churchill's headquarters in Chillicothe supports eight local phone line links to an earth station in Kansas City, Mo. This configuration boosts network reliability, according to Atkins.

"If one of those phone lines should go down, a fix, with a quick software change, can switch the sites that use that circuit to one of the other seven sites. This prevents us from suffering any downtime," he explained.

Previously, he noted, the network was configured with five long-distance lines, each serving

16 or 17 locations, which meant that 55 to 60 IBM printers and terminals were supported by each line.

If a circuit went down, Atkins said, the company had to wait until it was repaired by AT&T, and in the meantime, all the locations using the line would not be able to communicate.

According to Atkins, Churchill has been growing at an annual rate of 15% to 25% for the last few years. He said that on the old network, which was configured with 4.8K bit/sec. modems, response times were getting worse because of heavier traffic loads and devices being added to the network.

"It was taking us longer to do our work, resulting in overtime," Atkins said. "When our billing personnel have to wait 15 seconds to three minutes before they can start generating a new invoice, that's costly. We should be getting three- or four-second response times."

Another cost advantage of the network, Atkins said, is the fact that satellite circuits are not tariff-controlled or priced on a distance basis.

The reason Churchill selected Cylix as its vendor, Atkins said, is that most of the other company evaluations were strictly over-the-air aperture terminal suppliers.

"We didn't feel we were large enough to justify the expense of putting a satellite dish at each of our locations and not using any land lines. That configuration is a little more costly than what Cylix was able to design for us," he noted.

Atkins said he expects the new network to support "unlimited" growth. "It allows Churchill to easily add extra lines from Chillicothe to Kansas City,

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BY MITCH BETTS
OF STAFF

WASHINGTON, D.C. — Federal agencies may get their first taste of Integrated Services Digital Network (ISDN) services a little sooner than expected, according to Michael L. Corrigan, chief of the new Federal Telecommunications System 2000 project.

"We got a bit of a surprise," Corrigan said, when private branch exchange vendors AT&T and Northern Telecom, Inc. agreed to provide ISDN Primary Rate Interface services as soon as October 1990. Originally, AT&T and Northern Telecom had planned for a January 1991 availability.

However, full-rate ISDN services will not be available to

FTS-2000 users until 1992.

At last month's Federal Computer Conference, Corrigan said that the Primary Rate Interface service is needed to provide automatic number identification so that agency managers can receive detailed billing of FTS-2000 services.

Some on Centrex service
Local exchange carriers that provide Centrex service to the government will also provide automatic number identification, in the same way they provide that information to long-distance carriers, according to Corrigan.

He is deputy commissioner of the U.S. General Services Administration for telecommunications services.

By fiscal year 1991, which

starts next Oct. 1, "all services will be billed by usage, and that's the reason that automatic number identification is a crucial item," he said.

Organizations are currently billed based on previous usage patterns.

Under the 10-year FTS-2000 contract, the government does not own any equipment or lease any lines but instead pays the network vendors, AT&T and U.S. Sprint Communications Co., on a per-minute usage basis. FTS-2000 is the government's intercity digital network, providing switched voice and data services, packet switching and dedicated data transmission services.

The private voice/digital network was inaugurated last month [CW, Oct. 16].



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Booz database

CONTINUED FROM PAGE 63

according to Millos.

In essence, the system is a classic case of departmental computing on a LAN. It uses employment management software called Restracc, made by Microstar Systems, Inc. in Newton Highlands, Mass., running on a compatible 386 or 486 PC. The Restracc system is used by 28 recruiters and support personnel at the information technology center.

The core of the system is a software module for tracking job applicants throughout the hiring cycle—an important function for a department that re-

ceives 1,500 resumes per month, Millos said. If nothing else, it helps to prevent lost resumes and wasted effort on duplicate resumes.

"Any human resources department is just full of paper, and a resume could be on any one of 16 people's desks... so it helps to automate the process," she said.

Did I get the job?

In addition, automated resume-tracking is helpful when eager applicants inevitably call to find out their status. Millos said the center's receptionist uses Restracc to handle routine inquiries and tell applicants exactly where their resume stands.

Furthermore, Restracc is used to produce standard correspondence such as acknowledgment letters, post-interview

letters and rejection letters. Doing this within the office, rather than sending the task to a central word processing department, saves a lot of time, Millos added.

There are also times when the system saves money. If the Booz-Allen recruiters discover that an applicant suggested by an employment agency already is listed in their Restracc system, they can hire the person directly and avoid paying a \$15,000 agency fee, she explained.

At the management level, Millos uses Restracc to produce a monthly recruiting and financial report, allowing the department to compare its costs with its budget. She said the company's mainframe accounting system does not provide the detail or timeliness necessary for the human resources department. "This is not top

priority for them. They're worried about billing clients and revenues," she said.

Millos praised the Restracc product for being menu-driven and able to handle customized fields. However, she said the report-writing language "could be more user-friendly."

Millos expects to hang onto Restracc as a stand-alone system, even though it cannot be integrated with a full-scale human resource management system, which Booz-Allen is likely to acquire in the next few years. She said a human resource system for current employees does not need to be cluttered with data on job applicants.

"You don't want to keep 1,500 resumes, probably 90% of which are garbage, with everything else" in the personnel database, Millos said.

BIT BLAST

COS Mark to include 802.3

The Corporation for Open Systems (COS) has officially extended its COS Mark Program to include the IEEE 802.3 Ethernet LAN protocols. The program, which tests and licenses products for conformance to Open Systems Interconnect (OSI) standards, formerly addressed only IEEE 802.4 Token-Bus specifications.

In addition, COS and the Europe-based Standards Promotion and Applications Group have announced that they will co-develop, in cooperation with the Open Systems Interconnect (OSI) Network Management Forum, conformance testing tools for OSI network management protocols such as Common Management Information Protocol. The systems are scheduled to be available by the fourth quarter of next year.

The health-care industry will be a major growth area in the electronic data interchange market over the next five years, according to New York research firm Plunk/SVP. Health-care organizations' purchase of EDI hardware and software will climb from \$79 million in 1988 to \$116 million by 1992, the firm said.

Siemens AG and Digital Equipment Corp. announced the first fruits of their alliance to promote applications linking Siemens Hicom private branch exchange systems with DEC VAXs. The two vendors are introducing products for computer-integrated telephony applications, including servers, applications interfaces and an applications connectivity link to Siemens/Hicom 300 systems.

Julmar Associates, Inc. recently announced a program to provide local area networks that will connect Digital Equipment Corp. electronic mail systems to a variety of local-area network mail systems and academic and research networks, such as Bitnet and Internet. Specific product announcements and shipments are expected by year's end.

Stratus Computer, Inc. has launched a program to develop Integrated Services Digital Network (ISDN) products for end users and network services. Stratus will develop hardware and software products to integrate its XA 2000 Continuous Processing Systems with ISDN networks, the fault-tolerant computer vendor said.



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LAN Bridge revved up for Ethernet support

BY ELISABETH HORWITT
CHICAGO

ATLANTA — Digital Equipment Corp. announced a reportedly more powerful version of its LAN Bridge product line at the recent Locanet '89 show.

LAN Bridge 200 is said to support a filtering rate of 29,760 packet/sec. and a forwarding rate of 14,880 packet/sec. This enables the bridge to keep up with Ethernet speeds of 10M bit/sec., as it forwards packets between two local-area networks, according to director of LAN marketing Gail Daniels.

DEC's older LAN Bridge 100 supports

24,272 packet/sec. filtering rates and 13,044 packet/sec. forwarding rates, Daniels said.

LAN Bridge 200 is said to provide fiber-optic-based connections between two Ethernet LANs over distances of up to 10 km. The same fiber that connects LAN Bridge 200s can be used to support the Fiber Distributed Data Interface (FDDI) backbone that DEC has announced intentions to provide, Daniels noted.

DEC also announced LAN Bridge 150, which replaces the LAN Bridge 100 as a lower cost version of LAN Bridge 200 and has the same throughput as the 100.

Both the 150 and 200 are said to con-

nect two Ethernet LANs either locally or over a fiber-optic link.

DEC also intends to provide FDDI wiring concentrators that deliver the full FDDI 100M bit/sec. speeds to the desktop, Daniels added. No time frame was given, but DEC should deliver a full range of FDDI products, including adapters and wiring concentrators, within the next couple of years, Daniels said.

The company also announced Version 2.0 of its Remote Bridge Management Software. The package includes password protection against unauthorized reconfiguring of bridges and additional filtering capabilities.

Working in concert with a LAN Bridge 150 or 200, the software is said to restrict which users or protocols are allowed to send packets outside a given LAN, across the bridge to another LAN. The source and protocol filtering capabilities address potential bridge traffic bottlenecks and security issues. Protocol filtering also enables managers to figure out what type of workstation is causing a "broadcast storm" by a process of elimination, Daniels explained.

DEC INTENDS to provide FDDI wiring concentrators that deliver 100M bit/sec. speeds to the desktop.

Remote Bridge Management Software Version 2 is scheduled for availability this month and is priced at \$1,224. LAN Bridge 200, available immediately, is priced at \$8,500 for the local version, \$9,500 for the 3-km fiber-optic version and \$14,000 for the 10-km version.

The LAN Bridge 150 is available immediately, priced at \$6,500 for the local version and \$7,500 for the 3-km fiber-optic version. No 10-km version of the 150 is available.

Tool offers taste of ISDN

BY JOANIE M. WICKLER
CHICAGO

With hopes of enticing small users to turn to the public telephone network for occasional large-volume data transmission needs, Bell Atlantic Corp. recently announced software it says will offer a taste of broadband Integrated Services Digital Network (ISDN) capabilities.

The software, slated for availability in fourth-quarter 1990, should allow users to move files quickly through the public network and "get the effect of a local-area network wherever ISDN is available," according to John Sennholz, Bell Atlantic's vice-president of new technology.

Proprietary data compression techniques increase throughput, reportedly allowing data to travel at full-duplex speeds to 6M bit/sec. (3M bit/sec. in each direction) over an ISDN Primary Rate Interface link. Such links support speeds of up to 1.5M bit/sec. and typically connect hosts and communications switches.

The product will load into a Telex Communications, Inc. terminal adapter specifically designed to operate with the software. The adapter establishes the link between the computer and a Basic Rate or Primary Rate ISDN line.

The initial software version will run on IBM Personal Computer XTs and ATs, and future versions are planned for other popular computers.

Field tests of the basic ISDN connection software version running on IBM PC XTs and ATs are slated to begin during the second quarter of 1990. Beta-test users should be mailed down next month, according to Sennholz. Pricing is not available at this time.

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Cravis

CONTINUED FROM PAGE 63

The precision of a design tool depends on the stage of the design as well as on the status of the network. In the pre-implementation stage, where the network is only a thought object, we can make broad-range estimates. These will often suffice to weed out alternatives on the basis of cost.

At the other end of the scale, to fine-tune the performance of an existing network, we need reliable message volume data and would apply well-refined tools such as simulation.

There are two basic network design modeling methods, the analytical model and the simulator. The simulator embodies, insofar as the input data contain them, all relevant aspects of the network, such as protocol idiosyncrasies. However, there is some statistical variability to the results, since each simulation period is a time sample.

On the other hand, the analytic model often uses simplifying assumptions, and thus it may not account for everything that influences the network performance. However, it does lend itself to a quick scan of results over a wide range of conditions.

The time-shared computing services of The Ardes Group in Rockville, Md., illustrate the analytical tool. The Queue program, for example, calculates the response time that can be expected on a polled, multipoint circuit.

The designer enters input data to Queue, including the number of devices on the circuit, transaction characteristics, circuit speed and protocol parameters, using menus and prompts. The program requires one significant noncommunications parameter, the average processing time per transaction.

If the indicated response times are too slow, the designer may increase the circuit speed or distribute the devices over more multipoint circuits. By iterating the analysis runs, we arrive at a satisfactory multipoint circuit configuration.

The simulation approach is illustrated by the Network II.5 program from Caci Products Co. in La Jolla, Calif. The program can simulate the operations of several different networks, including, as our example here, a local-area network that uses the Ethernet, Token-Ring, Token-Bus or Fiber Distributed Data Interface (FDDI) protocols. The necessary input data includes the number of connected devices, transaction rate per device, transaction and overhead lengths and parameters related to the protocol and hardware. The results are the response times, numbers of messages delivered and lost, device utilization and queuing statistics.

Network II.5 illustrates the differences between the two approaches.

Whereas a program such as Queue relies on formulas derived from modeling the network, Network II.5 and other simulators carry out an event-by-event simulation.

Finally, several computer services make available to the designer the costs of telecommunications facilities. The tariffs of telephone companies, interchange carriers and other service providers change frequently. Thus, it is helpful to have an on-line service such as Q-Tel 1000, from CCM/McGraw-Hill in Ramsey, N.J. A designer enters descriptors for the type of facility whose cost is in question. For example, for a point-to-point dedicated circuit, the data would be the locations of the end points, type of service and choice of carrier.

The program refers to a database of carrier tariff data that the vendor maintains. It displays the nonrecurring and monthly circuit costs in various levels of detail, as the designer wishes.

Network design is both straightforward and complex. Network optimization requires the careful selection of analytical tools and up-to-date information. Properly selected, however, the mathematical analysis is straightforward. Good engineering knowledge, solid familiarity with available tools and access to current data are all essential to sizing — and optimizing — the data network.

Cravis is a senior member of the professional staff at Arthur D. Little, Inc. in Cambridge, Mass., and author of *Communications Network Analysis*.

NEW DEALS

DEC does \$15M deal with Boeing

Digital Equipment Corp. has sold a \$15 million networked office information system to Boeing Computer Services to support the National Aeronautics and Space Administration (NASA) Space Station Freedom program. DEC will provide up to 15 DEC VAX 6300s, All-in-1 mail and Decnet software to assist NASA's Technical and Management Information System in linking NASA sites.

Lufthansa German Airlines has developed an electronic data interchange (EDI) system with Paris-based Group Generale De Service Informatique and Danet GmbH in Darmstadt, West Germany. The latter are suppliers of Open Systems Interconnect products and services. Called Mosaic, it is said to be the first data network based on EDI technology and designed to serve the cargo-handling industry. Lufthansa plans to offer Mosaic as a value-added network to the international cargo-handling community.



NEW PRODUCTS

Local-area networking hardware

Cubix Corp. has announced an intelligent Ethernet controller for IBM Personal Computer ATs and XT's.

According to Cubix, the 2410 Ethernet front-end controller is compatible with the latest implementations of the Open Systems Interconnect and Transmission Control Protocol/Internet Protocol. The controller is said to be designed specifically for multitasking network environments and is equipped with an Intel Corp. 80186 processor and 1M byte of

dual-ported memory.

The 2410 with 1M byte of random-access memory sells for \$975; the 512K-byte version is listed at \$745.

Cubix
2800 Lockheed Way
Carson City, Nev. 89706
702-863-7611

Cogent Data Technologies, Inc. has introduced E/Master, an Ethernet adapter card with IPX drivers that offers support for Novell, Inc.'s Netware environment.

The 16-bit adapter incorporates a proprietary Bus Master technology to produce data transmission speeds of more

than 1M bit/sec., the firm said. It reportedly supports both diskless workstations and larger networks.

The product's list price is \$695.
Cogent Data Technologies
P.O. Box 926
Friday Harbor, Wash. 98250
206-378-2929

Local-area networking software

NBI, Inc. has introduced Officeworks Version 2.2, which is designed to allow Apple Computer, Inc. Macintosh users to utilize Officeworks networking and information management functions.

According to the company, the latest release provides electronic mail and file

sharing with personal computers, document retrieval and conversion services, central backup of files, time management and 3270 communications and procedural processing. The product is targeted at workgroups with both PCs and Macintosh machines and is scheduled for delivery in March 1990.

A 32-user system with a network server and Officeworks information management software is priced from \$18,800.

NBI
P.O. Box 9001
Boulder, Colo. 80301
303-444-5710

A wide-area network design software program designed specifically for multiple users over local-area networks is available from Network Management, Inc.

LAN Mind reportedly allows users to access and share data about WAN costs, configurations, plans and operations. It can analyze mesh and T1 backbone networks. The program can also automatically perform least-cost concentrator, multiplexer- and switch-location designs, the company said. Users can augment or design networks of up to 16,000 nodes without using complex partitions or sub-optimum designs.

A LAN server copy costs \$36,000.
Network Management
11242 Waples Mill Road
Fairfax, Va. 22030
703-365-4774

Network management

Palindrome Corp. is now supplying a retail kit to replace the archiving software supplied with other brands of 2.3G-byte tape systems with its own Network Archivist package.

According to the company, Network Archivist utilizes a Tower of Hanoi tape rotation to provide long-term protection without requiring a large number of tapes.

The announced price of the Network Archivist kit is \$1,295.

Palindrome
Suite 208
710 E. Ogden Ave.
Naperville, Ill. 60563
312-357-4600

Racal-Milgo has expanded its Sunrise family of network management systems with the addition of the CMS 400.

The product uses the IBM Personal System/2 as its hardware platform for network management and was developed to simplify database entry and network

Continued on page 76

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**COMPUTER
ASSOCIATES**

Continued from page 73

configuration, the company said. Features include an Auto-Learn function that supports automated database creation, and the system also provides the ability to control groups of diagnostic devices, the company said. Cost-sensitive help facilities are also included.

Pricing ranges from \$10,000 for an entry-level turnkey system to \$150,000 for a 512-channel, eight-operator system.

Racal-Milgo

1601 N. Harrison Pkwy.

San Jose, Fla. 33323

305-475-1601

Customer-premises equipment

The Info Group, Inc. has announced two products specifically designed for users of Rolm's computerized branch exchanges (CBX), including the 8000, 9000 and 9751 series.

According to the vendor, Comcomp Plus enables users to directly communicate with the Rolm system and automatically transfer all of the CBX database information into a personal computer-based Comcomp Plus database. It is expandable from 100 to 5,000 lines, and a 450-line configuration costs \$6,950.

The ATMS/Rolm system reportedly provides the same features as the company's ATMS Network Management system and provides a link between the ATMS and Rolm CBX databases. It is available for PC local-area networks, Digital Equipment Corp. VAX machines and the IBM 9370 and mainframe computers. Pricing ranges from \$25,000 to \$200,000.

The Info Group

46 Park St.

Framingham, Mass. 01701

508-873-8363

Links

Retix and Interactive Systems Corp. have announced two software products designed to aid migration from Transmission Control Protocol/Internet Protocol to Open Systems Interconnect.

The OSI Application Interface to TCPL reportedly permits OSI upper-level protocol applications, such as FTAM, X.400 or Virtual Terminal to operate over TCP/IP stacks. Slated for delivery in first quarter of 1990, the interface will be priced from \$95.

The Retix X.400 Gateway for Unix offers communications between TCP and OSI mail networks, according to the company.

Single-quantity list pricing starts at \$225, and the product is scheduled to begin shipping in the second quarter of 1990.

Retix

2844 30th St.

San Jose, Calif. 95145

415-399-2200

Rose Electronics has introduced two variations of its networking unit that reportedly interconnects computers or peripherals using the common serial and parallel interfaces.

The Master Switch is said to combine the features of buffered peripheral sharing, data private branch exchange (PBX) functions, software-controlled switching and automatic switching into one unit. The N-Series for networking has up to 16 serial ports and one parallel port with a

transfer rate of 115.2K bit/sec. In the U-Series, each port is said to be programmable as serial or parallel, with up to nine ports available.

Prices range from \$395 to \$1,895.

Rose Electronics

P.O. Box 742871

Houston, Texas 77274

713-933-7673

Concord Communications, Inc. has announced a communications interface for linking personal workstations that adhere to IBM's Personal Computer AT standard to Manufacturing Automation Protocol (MAP) networks.

The Mapware Series 1210 reportedly conforms to MAP 3.0 and Open Systems Interconnect (OSI) standards, permitting

AT interoperability with otherwise incompatible computers and automation equipment. A companion programming aid, the OSI Programmers Package, is available for either MS-DOS or OS/2 and contains a tool box of utilities.

The Series 1210 with internal broadband modem costs \$2,295; with an internal carrierband modem, it costs \$1,895.

Concord Communications

753 Forest St.

Marlboro, Mass. 01752

508-460-4646

Mitek Systems Corp. has announced 3179G Graphics support for Transmission Control Protocol/Internet Protocol.

Using the company's Openconnect/Presentation Services, the graphics prod-

uct reportedly allows users on a TCP/IP network to emulate a 3179G/All Point Addressable device to gain access to graphics applications on IBM mainframe and midrange systems. The option is priced at \$795.

Mitek

2033 Chennault Drive

Corollon, Texas 75006

214-490-4090

Electronic mail

GSI-Danet, Inc. has announced another version of its Outlet/400 global message-handling software system based on the X.400 Open Systems Interconnect standard.

The software was designed to inte-

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grate smaller X.400 electronic messaging systems that are based on personal computers and local-area networks, the vendor said. Several network management features have reportedly been added to the system, including data integration, a relational database and administration and system management functions. End-user license pricing starts at \$5,000.

GSI-Daunt

Suite 300

1850 Centennial Park Drive

Reston, Va. 22091

703-758-0077

Modems/Multiplexers

Prometheus Products, Inc. has announced a 9.6K bit/sec. external modem

that offers throughputs up to 19.2K bit/sec.

The Promodem 9600 Plus reportedly follows CCITT V.32 standards and uses the Microcom Networking Protocol Level 5 protocol. According to the vendor, the modem implements full-duplex operation and will adjust speed to accommodate line quality.

Other features include a switch to transfer from voice to data calls, call-back security capability and support for both two-wire dial-up and leased-line operation.

The price is listed at \$995.

Prometheus Products

7225 SW Bosatta Road

Tigard, Ore. 97223

503-624-0571

NEC America, Inc. has reportedly increased the error-free data transmission rate of its N9631 V.32 modem from 9.6K bit/sec. to 19.2K bit/sec. by adding Microcom Networking Protocol Class 5 with data compression capabilities.

The N9631 modem is said to comply with CCITT V.32 and other standards and supports 300 to 9.6K bit/sec. transfer rates. Other features include automatic speed detection, asynch and synch operation and two-wire dial-up and leased-line compatibility. The device is priced at \$1,095, and current users can upgrade their units for \$150.

NEC America

110 Rio Robles

San Jose, Calif. 95134

408-433-1250

Multi-Tech Systems, Inc. has announced a modem for IBM Personal Computers, ATs and compatibles.

The Multimodem 832EC is reportedly an external board modem providing CCITT V.32 standard operation and operating asynchronously at 9.6K, 2,400, 1,200 and 300 bit/sec. According to the company, the modem is IBM AT command set-compatible and features V.42 error correction, along with data compression employing the Microcom Networking Protocol Class 5 protocol. Other features are said to include callback security, remote configuration capabilities and compatibility with various other standards.

The price is listed at \$999.

Multi-Tech Systems

2205 Woodale Drive

Mounta View, Minn. 55112

612-785-3500

Gateways, bridges, routers

Computrol, Inc. has introduced the Isoconn series, a family of bridges for Manufacturing Automation Protocol (MAP) Version 3.0 and IEEE 802.4 local-area networks.

The series was developed to provide a cost-effective means of connecting any combination of MAP 3.0 network media while simultaneously increasing the network performance through segmentation, the vendor said. The product's intelligent addressing scheme reportedly offers network traffic control functions and assists in isolating faults to a local segment of the network.

The bridges range from \$8,282 to \$11,750.

Computrol

239 Ethan Allen Highway

Ridgewood, Conn. 06877

203-431-2000

Newport Systems Solutions, Inc. has announced a family of local-area network bridges that interconnects geographically separated networks.

The LAN2LAN bridges are reportedly designed to connect a variety of networks including Ethernet, Token-Ring and Arcnet architectures. Capable of being used with dedicated or dial-up lines, the bridges can support single- or multiple-hop interconnections with the same or different speeds, the vendor said.

Prices for the bridges range from \$2,695 to \$14,495, depending on options and port configurations selected.

Newport Systems Solutions

Suite 107

4020 Birch St.

Newport Beach, Calif. 92660

714-752-1511

Fibermax Corp. has unveiled its FX5500 Series, which includes three Fiber Distributed Data Interface (FDDI) network stations: a Token-Ring Source Routing Bridge, an Ethernet MAC Bridge and a Router for Transmission Control Protocol/Internet Protocol networks. The products include several features unavailable in older FDDI offerings.

A Network Station Management system provides monitoring, diagnostic and control functions for the FX5500 series. Pricing starts at \$22,600.

Fibermax

96310 Topanga Canyon Blvd.

Chatsworth, Calif. 91311

818-709-6000

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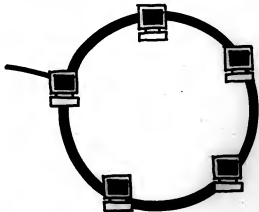
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MANAGER'S JOURNAL

EXECUTIVE TRACK



Susan E. Eldridge has been named director of management information systems at the Society for Human Resource Management (SHRM) in Alexandria, Va. Formerly the American Society for Personnel Administration, SHRM is the world's largest association of human resources professionals, with more than 40,000 members.

Eldridge oversees the selection and installation of all new hardware and software services and manages all programming and training for the MIS staff of 92.

She was previously a consultant in Xerox Corp.'s McLean, Va., office, specializing in systems integration for federal accounts. She was also manager of software development at Telecommunications Industries, Inc.

Eldridge holds degrees in economics and management from Oakland University in Rochester, Mich.



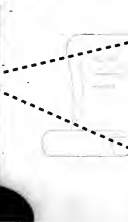
Chris A. Wolfe has been named director of management information systems at *Danner Press/The Press of Ohio*, a Canton, Ohio-based printer of magazines, educational workbooks and catalogs.

Wolfe was previously project manager at *Leaseway Transportation, Inc.* He holds a bachelor's degree in technical education and associate degrees in data processing and business management from the University of Akron. Wolfe and his family live in Stow, Ohio.

Who's on the go?

Changing jobs Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Commonwealth Road, Framingham, Mass. 01701-9171.

Beyond mere automation



DAVID PLANNETT

Change. It's a word that virtually all progressive business leaders believe is necessary for companies to remain competitive in a rapidly shifting environment. Nonetheless, it strikes fear in the hearts of countless executives, managers and employees who have become comfortable with established processes.

Information technology can be a powerful force to change the way people work and allow companies to rethink and redesign their business processes. Consultant Michael Hammer and others are adamant in their view that the IS function must do more than simply automate what is already in place.

Many companies have achieved major changes in business processes but not without financial and organizational fits and starts. At last month's Hammer Forum '89 in Boston, several of those companies sent representatives, some from IS and some from business management, to tell of their firms' experiences embodying the conference theme: re-engineering the corporation.

BY CLINTON WILDER
CHIEF



One of the most critical decision makers in Pfizer, Inc.'s new product development does not work for Pfizer. No new pharmaceutical product can reach the market without the approval of a reviewer from the U.S. Food and Drug Administration (FDA), who must sift through new drug applications as long as 400,000 pages.

In December 1987, Pfizer's vice-president of clinical and scientific affairs decided there had to be a way to speed up the process. In just two weeks, the pharmaceutical division's 60 information systems employees, most of whom hold MBAs, developed a prototype of a personal computer-based system to replace the manual review process.

"We had to be like the pods in *Jaws* of the *Body Snatchers*," said Vits Casese, Pfizer's director of pharmaceutical systems. "We had to jump into the reviewer's head."

The lightning-fast prototype was a key to success. "That was perhaps the most effective vehicle to get management to buy into the project," Casese said. "There was a sense of ownership by the FDA reviewers and Pfizer management from the beginning."

Today, Pfizer lends an IBM Person-

al System/2 Model 80 with its computer-aided new drug application (CANDA) software to the FDA reviewers. The system has cut review time drastically, allowing the reviewer to do keyword searches and other database functions on the voluminous clinical test data in the application. Imaging technology allows Pfizer to submit physicians' original notes on the tests, rather than reports derived from them.

The CANDA workstation did not automate what was already being done; the FDA still requires the paper application. But it allows the FDA reviewers to make more efficient use of the information in reaching their decisions.

"We shook up some basic assumptions," Casese explained. "It used to be that our regulatory affairs people were the only ones speaking to the FDA. We are changing the way Pfizer does business."



Any change in fundamental business processes through the use of information systems is hard, but it is even more difficult when your first attempt fails. That is what happened at Rubbermaid, Inc., but the Worcester, Ohio-based houseware and commercial rubber products maker revised its original approach to successfully revamp its

order processing system.

A manufacturer with some nine years of consecutive earnings growth quarters, Rubbermaid launched an attempt to simplify and automate its 21-step order entry, invoicing and shipping process in 1984. With networked minicomputers in each of its four lines of business, Rubbermaid designed and installed a common warehouse operation and inventory control system for each business.

It was a case of too much too fast, said Joseph Balasue, Rubbermaid's vice-president of corporate MIS. "We just could not process the volume in the time we wanted," he said. Back at the drawing board, Rubbermaid decided that mainframe horsepower was required and broke the new system down into three business-specific projects, two of which, the housewares and the Canadian business units, are currently up and running.

Among the benefits of the new system are the on-line availability of data about a customer's order status, the ability of an order entry manager to "reserve" inventory for a large customer and much more flexibility in allocating different products to different delivery schedules. That flexibility, consultant Michael Hammer pointed out, is critical for suppliers to large retailers that increasingly control the distribution channel.

Balasue said Rubbermaid's second
Continued on page 84





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5. Are you feeling insecure about your PC LAN security?
6. Is the performance of your network going down as the number of users goes up?
7. Do your computing vendors spend more time pointing fingers at each other than pinpointing problems?
8. Is it impossible to expand your computer system the same way you add users. . . incrementally?
9. Is Engineering having trouble communicating with Marketing? Is Building 2 difficult to reach from Building 6? Is the second floor not talking to the seventh?
10. Are your users wasting time trying to communicate with uncommunicative hosts?
11. Is your computing system unable to run both DOS and OS/2 programs?
How about the new SQL database applications?

TAKING
CHARGE

Carl Shusterman

Time to open
U.S. doors to
world's IS talent

It's time for the U.S. to aggressively re-evaluate its immigration policy.

Consider the following: The National Science Foundation reports that 36% of all computer science graduate students in U.S. colleges are foreign-born, along with 47% of all engineering graduate students and 40% of math graduate students.

The U.S. Labor Department, in its study "Labor Market Shortages," warns of labor deficiencies in technological fields. The report states that "the need for computer systems analysts, scientists and health professionals will increase two to three times faster" than the growth expected among service workers as a whole. Finally, the U.S. Census Bureau projects that, sometime early in the next century, the U.S. will begin to lose population.

Where will new computer technology talent come from? Many information systems managers already know the answer. Qualified programmers and analysts are being recruited from Canada, Great Britain, Taiwan, the Philippines and elsewhere to fill positions for which no U.S. workers are available.

In many cases, these experts are playing crucial roles — developing software, starting companies or conducting breakthrough research. In an increasingly competitive world, the U.S. clearly needs a strategic immigration plan — one that embraces the precept that talented people are our best resource.

Our actual immigration policy falls short of this goal and is particularly prejudicial to the computer/information processing industry. An example is the newly proposed Immigration Act of 1989, which has passed the U.S. Senate and is being considered now by the House.

The bill would reform the U.S. system of legal immigration for the first time since 1965. It acknowledges our deficiency of technical and professional talent by providing for an increase in the number of foreign professionals allowed to enter the U.S. each year from 27,000 to 40,100. However, the bill would also make it more difficult for such professionals to qualify for U.S. residency.

Currently, foreign-born analysts and programmers with a bachelor's degree or equivalent may qualify to emigrate to the U.S. under the professional (H-1) visa category. Under the new bill, applicants would be required to hold an advanced degree — such as a master's or Ph.D. — to qualify for immigration under the professional category.

It is important to note that nonprofessionals will not qualify for temporary working status in the U.S. This means that all those foreign analysts and programmers who lack an advanced degree

could be excluded from working in the U.S. on a temporary basis.

This requirement is a particular roadblock for computer specialists, because of the relative newness of their discipline. Few academic programs for computer science existed 15 years ago, hence many seasoned foreign specialists lack even an undergraduate degree in the field. To require a graduate degree as a temporary working visa requirement disregards existing market conditions.

The IS community, and the U.S. economy as a whole, would be better served by an expansionist immigration policy — one that declares our "manifest destiny" to capture a select portion of the best and brightest minds in the world.

The policy should include the following:

- Increase the number of people allowed to obtain immigrant visas in the professional category to 120,000 per year. Currently, demand for these professionals exceeds 80,000 per year. However, a backlog has built up. By allowing 120,000 professionals to enter the U.S. each year, we would both fulfill current demand and deplete existing backlogs.

THE IS community, and the U.S. economy as a whole, would be better served by an expansionist immigration policy — one that declares our "manifest destiny" to capture a select portion of the best and brightest minds in the world.

- Remove the fixation on degrees as a means for demonstrating professional expertise. It is counterproductive to say that a computer science graduate just out of college may qualify for a visa when a computer science professional with 20 years of experience may not, simply because he lacks a degree in the field. This is not the way to attract the people who will do the profession the most good. Let experience count for something.
- Eliminate the labor certification requirements in shortage occupations. The visa procurement process should be streamlined for foreign professionals involved in such occupations. Currently, a U.S. company seeking to employ a foreign national must go through a long and tedious process of demonstrating that there are no U.S. workers available for the position, even if it is clear that the occupation is in short supply.

The payoff from this policy would be immediate, particularly in technological innovation. *Forbes* magazine reports that one-fourth to one-half of the Ph.D.s in top U.S. research labs are foreign-born. Every study I know of indicates that immigrants create jobs and stimulate the economy. Those interested in keeping the U.S. a technological leader should consider the benefits of a progressive immigration policy . . . and the consequences of a passive one.

Shusterman served as a general attorney and trial attorney with the U.S. Immigration & Naturalization Service from 1976-1982. He currently is a partner with the Los Angeles office of Herli & Mahand.

Beyond

CONTINUED FROM PAGE 79

attempt had much more involvement of the users and much more prototyping. "Things about the business changed during code development," Balnave said. "We had to get the users more involved, and we also had to convince them to learn the system because they were going to own it."

What began as an 18-month project for Rubbermaid turned into a four-year effort, but Balnave has no regrets about the decision to abandon the initial approach. "If you implement a successful system, they'll forget the time it took," he said. "But if you put in a bad one, they'll never forget it."

Deregulation and globalization have dramatically changed the rules of competition in the banking industry. Money center banks of the past were primarily in the loan business. Today, banks must differentiate themselves by offering customers an array of services, nearly all of which depend on information technology.

Responding to those forces, Manufacturers Hanover Trust Co. earlier this year formed Geoserve, a business unit consolidating five functions: cash management, funds transfer, trade services, corporate and institutional trust and global custody and safekeeping. More importantly, the change transformed each of the five from back-office functions to businesses expected to generate a profit.

"Many people within Geoserve were formerly in cost centers," said Richard Mattes, executive vice-president of operating services at Manufacturers Hanover. "That was a major culture change."

Another change was centralizing critical functions of the five units. Although each business runs autonomously, they share a central sales force, sales and marketing database and IS support and development.

That centralization allowed the bank to consolidate five IBM data centers into two, saving \$1 million per month in processing costs, Mattes said.

Information systems are a critical part of each Geoserve business. "So much of our business depends on our electronic capability," said Patricia Seidist, a Manufacturers Hanover vice-president.

As an example, among Geoserve's offerings to corporate treasurers shopping for financial services is a workstation called Interplex with software that integrates corporate accounting and investment functions. "The key was not the architecture itself," Mattes said, "but the insistence on integration and the ongoing involvement of MIS in the development effort."

To win the support of top management and end users, Mattes said the bank followed these guidelines to implement Geoserve, many of which applied to other case studies of change mentioned at the conference:

- Demonstrate the benefits from the start.
- Implement the project in phases.
- Get everyone thinking about both revenue and cost.
- Maintain communication with top management.

Simplification of business processes was a common theme throughout Hammer Forum '89, and one of the best examples was offered by Ford Motor Co. Ford essentially replaced a complex paper invoicing system for its suppliers with an electronic evaluated receipts settlement system.

Crossing functions such as receiving, purchasing, accounts payable and accounts receivable, the system simply authorizes payment to the supplier when the purchase order matches the material record of purchased goods in three data categories: the supplier code, part number and number of units ordered. In essence, the invoice was eliminated.

Such a system required changes in the purchasing department's work priorities, inventory record-keeping and other long-held ways of doing business.

The biggest challenge was not the technology but overcoming those ingrained habits, said David Barry, who supervised the project as manager of Ford's financial controls and management services department.

"The resistance to change is incredible," Barry said. "We had to motivate people with an average of 15 years experience to want to change. We thought it would take a year, and it's still going on after four."

Barry said the critical success factor in pushing for change was the involvement and leadership of Ford's top information

systems executive, S. I. Gilman.

"He convinced purchasing and the other departments of the need for it; then we announced it to the board of directors," Barry said. "That's Ford's way of making sure we do things."

The theme was echoed by Hammer and many other speakers: While innovation can be sparked anywhere in an organization, massive change of established business processes must be led by senior management.

"Once you've convinced the top level, you've got a certain entree," Barry said. "With that mandate, we were able to say, 'We are making the change, and you're either with us or against us.' We got enough momentum going that the herd instinct took over."

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CALENDAR

Many of the leading academics in the information systems community will ponder the next decade in IS management when the 10th Annual International Conference on Information Systems is held in Boston Dec. 4-6. Keynote speakers are George C. Lodge, Harvard Business School professor, and Lester C. Thurrow, dean of the MIT Sloan School of Management. Conference topics include the strategic implications of Europe 1992, the role of IS in transforming organizations and a debate on research methodology in IS. For more information, contact Judith Quillard, Center for Information Systems Research, MIT Sloan School of Management, 77 Massachusetts Ave. E40-191, Cambridge, Mass. 02139.

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Off Product Integration Conference, Washington, D.C., Nov. 28-Dec. 1 — Contact: Conference Manager, U.S. Professional Development Institute, Suite 221, 1734 Elm Road, Silver Spring, MD 20905.

Principles of Handling for Mounting and Binding, New York, Nov. 28-29 — Contact: National Retail Merchants Association, Conference Registrar, 180 W. 33rd St., New York, N.Y. 10001.

Advancing Lights-Out Data Century Conference, Washington, D.C., Nov. 28-30 — Contact: Nelson Melchior, Manufacturing Institute, 23rd Floor, 437 Madison Ave., New York, N.Y. 10022.

Midwest Business Conference & Exposition, Long Beach, Calif., Nov. 28-Dec. 1 — Contact: Henry Thayer, MCBCE, 1 Purvis Road, Lexington, Mass. 02173.

Disaster Recovery Planning, New York, Nov. 30-Dec. 1 — Contact: Vera Lassar, 130 W. 50th St., New York, N.Y. 10019.

LAN Forum 1989 Conference, Atlanta, Nov. 30-Dec. 1 — Contact: Alan C. McWhorter, LAN Forum, P.O. Box 163223, Austin, Texas 78716.

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Computer Graphics for Design, New York, Dec. 3-6 — Contact: Computer Graphics for Design, 60 Stephen Ave., Newfield Manor, N.Y. 10563.

International Conference on Design for Manufacturability and Concurrent Engineering, Miami

Beach, Dec. 3-6 — Contact: Ken Tabin, CAD/CIM Alert, 1585 Commonwealth Ave., Boston, Mass. 02215.

Automated Data Center Seminar, Newport Beach, Calif., Dec. 4-6 — Contact: EPAC, Post Meridian Plaza & Co., Executive Education Registrar, 1 Channing Ridge Road, Morristown, N.J. 07960.

Implementation Strategies for Integrating Support Systems into Manufacturing Computing, Arlington, Va., Dec. 4-6 — Contact: Dennis Kane, Decision Support Technology, 125 Cambridge Park Drive, Cambridge, Mass. 02145.

Information Management on Information Systems (ICIS), Boston, Dec. 4-6 — Contact: Judith Quillard, ICIS '89 Planning and Arrangements Committee, MIT, Cambridge, Mass. 02139.

Managing IS in the 1990s, Washington, D.C., Dec. 4-6 — Contact: Leslie Goodman, Quanta & Associates, 405 River Road No. 68, Bedford, N.J. 07002.

Supporting End-User Strategies, Washington, D.C., Dec. 4-6 — Contact: Technology Transfer Institute, 781 Tenth St., Santa Monica, Calif. 90402.

Winter Simulation Conference, Washington, D.C., Dec. 4-6 — Contact: Kenneth Maclean, Printer Corp., P.O. Box 2415, 1306 Comberland Ave., New Lehigh, Ind. 47965.

Database World Conference & Exposition, Boston, Dec. 5-7 — Contact: Digital Consulting, Inc., 6 Wood St., Andover, Mass. 01810.

Personal Computer Outlook, San Francisco, Dec. 5-8 — Contact: Technology Partners, Suite 560, 419 Van Ness Ave., South, New York, N.Y. 10018.

TechConnect West: Networking the 1990s, Long Beach, Calif., Dec. 5-7 — Contact: Tech Connect West, Suite 200, 2255 Capital of Texas Highway, Austin, Texas 78721.

Uniform Edge and Conference, Dallas, Dec. 5-7 — Contact: North American Telecommunications Association, Suite 550, 2000 M St. N.W., Washington, D.C. 20036.

Consulting Skills for the Information Processing Professional, Washington, D.C., Dec. 6-7 — Contact: Leslie Goodman, Quanta & Associates, 405 River Road No. 68, Bedford, N.J. 07002.

Government Communications Conference, Washington, D.C., Dec. 6-8 — Contact: Conference Manager, U.S. Professional Development Institute, Suite 221, 1734 Elm Road, Silver Spring, MD 20905.

Human Resources Information Management Society Winter Meet, New York, Dec. 6 — Contact: HRISAT, Suite 201, 170 Broadway, New York, N.Y. 10008.

Investing in the Future of Computing and Communications, Cambridge, Mass., Dec. 6-7 — Contact: Patricia Ryland's Office Computing Group, Suite 515, 148 State St., Boston, Mass. 02109.

Video Presenting The New Millennium for Computers and Communications Conference, Newport, N.J., Dec. 6-7 — Contact: Multi-Pass Corp., P.O. Box 138, Clifton, N.J. 07015.

Graphics and Image: The New Revolution, Santa Clara, Calif., Dec. 7 — Contact: International Data Corp., P.O. Box 909, 1500 S. Fremont, Fresno, Calif. 93726.

DEC 10 16

800 User Group Meeting, Boca Raton, Dec. 11 — Contact: 800 Systems, Inc., 125 Technology Center, West Palm Beach, Fla. 33404.

AEC Super Show & Conference for Architects & Engineers, New York, Dec. 12-14 — Contact: Exposition International, Inc., 8 Independence Way, Princeton, N.J. 08540.

Advancing Lights-Out Data Century Conference, Los Angeles, Dec. 13-14 — Contact: Nelson Melchior, Manufacturing Institute, 437 Madison Ave., 23rd Floor, New York, N.Y. 10022.

The Software Computer Conference & Exposition, Baltimore, Md., Dec. 13-14 — Contact: Trade Group, National Trade Publishers, Inc., 212 S. Park St., Alexandria, Va. 22314.

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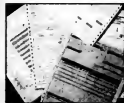
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A one-two punch

Earthquake, Hugo test insurers' claim systems

BY ELLIS HOOKER
CW STAFF

On top of tens of thousands of claims still being processed in the aftermath of Hurricane Hugo in September, the insurance industry has had to handle thousands more filed during the past few weeks from policyholders in quake-ravaged San Francisco.

But the industry's information systems are handling the extra work well, according to insurance company IS executives.

"Sure, claims have increased substantially," said Norman Vincent, vice-president of data processing at State Farm Insurance Companies in Bloomington, IL. "But we have disaster plans, and when Hugo hit we put them in motion."

State Farm expects to receive 125,000 claims for fire insurance and another 25,000 for automobile insurance, as a result of Hugo.

Like other insurers, State Farm made the most of the advance warning about Hugo, deploying people and computer equipment to the Carolinas before the storm hit land. Fifteen "disaster kits," each containing six Hewlett-Packard Co. personal computers, claim forms and other items, were shipped to Charleston prior to the hurricane's arrival. Another nine kits were sent to San Francisco after that city's earthquake Oct. 17.

The PCs processed claims and managed logistical items such as tracking the whereabouts of State Farm employees. But the PCs were not electronically connected to the HP 3000s in State Farm's 600 regional claim offices nationwide.

Vincent admitted that State Farm still relies heavily on stacks of paper summaries of policyholders during emergencies; after a policyholder is checked against these paper records, the PC is used to process a claim and issue a check. However, that record still may be printed out and carried back to

the regional office, to be key-entered into a host database.

"It's what we have today," Vincent said, adding that it is looking into an electronic alternative to the manual approach.

Adjusting the load
Meanwhile, Allstate Insurance Co. in Northbrook, Ill., reconfigured its network to take the load of local offices in the Carolinas and San Francisco.

According to Robert Taylor, claim operations director at Allstate, the company first modified its telecommunications network for Hugo, using operators in claim offices in other states to answer calls from policyholders in affected areas.

Within a week after Hugo hit, causing an estimated \$6 billion in damage to the Carolinas, Allstate had begun shifting incoming calls to its three offices in South and North Carolina to its eight New Jersey claims offices.

"We redefined the dumb terminals in New Jersey to appear like the ones in North and South Carolina," Taylor explained. Reports taken in New Jersey are printed at the local offices in North and South Carolina. To date, the New Jersey offices have handled some 30,000 calls.

The experience with Hugo prepared Allstate for the San Francisco quake. Allstate was able to link its three Northern California offices with 10 centers in the southern part of the state by the next morning.

At The Travelers Corp., no change was needed in the company's IBM 3090 mainframes, operated in its Hartford, Conn., headquarters and in Atlanta.

"The primary issue is communications and power into the places where claims people work," said Larry Bacon, the senior vice-president of the data processing department.

Like Allstate, Travelers had backup kits shipped to the Carolinas and San Francisco. The one item Bacon will add to the kits next time is cellular phones.

Cramming for educational security

BY AMIEL KORNEL
CW STAFF

ANN ARBOR, Mich. — Universities across the country have begun linking their academic and administrative computer systems, giving students and faculty access to student records and other clerical information from personal computers anywhere on campus.

If done right, the linkup will reduce the work of the registrar's office and offer new time-saving services. If done incorrectly, it could become a hacker's dream come true, enabling intruders to peruse the records of their peers and even change their own grades.

The issue is as sensitive that the agenda of the 25th annual Educom '89 conference on IS in higher education, hosted here last month by the University of Michigan, included no sessions on data security, although it has long been a concern in the academic environment.

"In security, you do as much as you can, and you don't talk about it," explained Douglas Van Housding, University of Michigan's vice-provost of information technology, and chief organizer of Educom '89.

Many of the 3,600 attendees were reluctant to discuss the issue. "I definitely wouldn't talk about it in public," said one IS manager who requested anonymity. "I don't even want to discuss it with my boss."

However, the topic is likely to come out in the open as more institutions seek ways to tie administrative hosts into networks used for research and teaching.

"They're all wrestling with this," said Sam Place, director of telecommunications and administrative systems at the University of Michigan.

Gorilla cards

Pittsburgh State University in Pittsburgh, Pa., has started a pilot project. The school's 130 PCs are connected to a 10M bit/sec. fiber-optic Starlan network from AT&T, according to IS director Robert Keith. A 9.6M bit/sec. asynchronous gateway has been added to allow access to the Prime Computer, Inc. 9955 system used for administration.

Security and other features of the link have been beta-tested for the past six months in a pilot that gives 100 of the school's 6,000 students access to their records from PCs located in labs throughout the campus.

Floppy disks issued to each student are used to control access. "If an automated teller machine card is used in banking. If the password and information on the floppy gets the OK from the host system, the student gets access. If not, the floppy, called a Gorilla Card in honor of the school mascot, is ejected from the disk drive.

So far, so good, Keith said. "There is always going to be some malicious thing in a student environment, but by and large we haven't seen that."

Twenty of the school's 375 faculty members are being brought on-line. In three months, budgetary and grant information will be accessible over the network. By fall 1990, all students and faculty are expected to have Gorilla Cards.

The job is more complicated at large schools. The University of Michigan is considering an approach being developed at MIT in Cambridge, Mass. MIT's network security system has an access verification capability using encryption techniques built into the network rather than the host. In addition, he said, the university may replace ID cards with smart cards capable of generating new passwords for users.

Lights-out does not leave Mervyn's in the dark

BY ALAN J. RYAN
CW STAFF

HAYWARD, Calif. — The windowless room is devoid of human sounds. An electronic hum pervades the chilled air, and small green, red and orange lights look like warning signals as they flicker and blink in the dark.

Throw a switch and wait for the eyes to adjust. They focus on the centerpieces of the normally darkened data center: five Storage Technology Corp. 4480 Automated Library Systems which rely on robotics technology to mount, eject and store tape cartridges without human intervention.

The room is in the data center at Mervyn's, a department store chain and subsidiary of Dayton-Hudson Stores, Inc.

When workers hear talk of achieving a lights-out data center, it is likely they will fear for their jobs. But that does not have to be the case, explained Dyane Albrecht, a shift manager at the data center, speaking at the recent National Retail Merchants Association's Retail Information Systems Conference (RISCO) in New Orleans.

At Mervyn's, the head count of the operations staff was reduced by eight people by automating the data center, but there were no layoffs. "We met that schedule through promo-

tions and attrition," Albrecht explained. When the center was short of help before the switch was completed, Mervyn's brought in temporary data processing workers to tide them over.

Using the Library System Modules (LSM), "we perform more than 23,000 mounts and dismounts and 3,000 enters and ejects [into the library system] every week," she said. "We could not have reported that amount in a manual system."

She said the automated system, the mount time is typically just 40 seconds or less, saving an estimated 300 man-hours per week.

As a result, Albrecht said, the data center managers were challenged to bring the staff into a new era, which meant teaching new skills to existing workers.

"We encouraged the staff to

cross-train," she said.

Because of the automation, the workplace environment has improved for the workers, Albrecht said. By creating zones — the DASD and tape libraries make up the darkened zone — the "command center" where the humans work can be an environment more conducive to humans. At Mervyn's, it is a carpeted office. "The workers don't have cold air blowing up their legs," she said.

Another area that is falling into the automation ranks at Mervyn's is the printing room.

By converting two of its printers to roll-paper feed, Albrecht said considerable time and effort has been saved. "A roll of paper can last six hours, as opposed to the workers having to change 30 to 40 boxes of paper during that time," she said.

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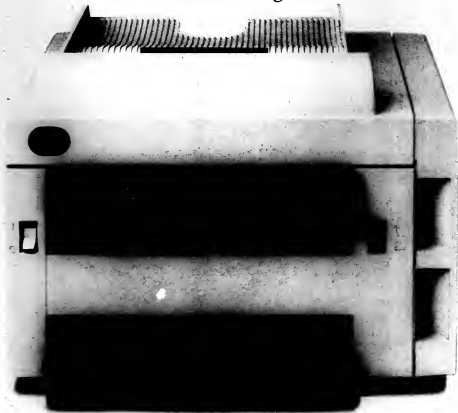
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The space-saving footprint of the IBM LaserPrinter: 33% smaller than its main competitor's.

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give that job to someone else anyway. So it's nice to have a printer that will do it for you automatically.

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Speed	✓ up to 10 ppm	up to 8 ppm
Footprint	✓ 291 sq. in.	432 sq. in.
Paper-handling options	✓ 500 sheets, 75 envelopes	15 envelopes*
Collates letters/envelopes	✓ yes**	no
Plotter emulation	✓ standard	optional
Resident fonts	✓ 10	6
Font card size***	✓ credit card	"8-track" cassette
Standard weight	✓ 33 lbs.	50 lbs.
Parts***	✓ 400	1000
Dots per inch	300 x 300	300 x 300
Printer emulation	✓ IBM, HP compatible	HP compatible
Printer engine	IBM	Canon
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*HP envelope tray replaces standard paper tray **With paper-handling options ***Approximate

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IBM

Umbaugh

CONTINUED FROM PAGE 1

rotation through four departments. It gave me an early start on thinking about business and technology together."

While Umbaugh credits an accident, colleagues say they knew early on that his accession to senior management was a matter of time. He was a strong communicator of general business goals long before data processing people were exhorted to leave the safety of the glass house.

"He is a closet intellectual who is a success as a businessman," says Lewis E. Leeburg, director of information systems research at UCLA's Anderson School of Management and chairman of the Southern California chapter of the Society for Information Management. "He has always expressed IS challenges and concerns in general business terms. He was talking about strategic systems long before it was fashionable."

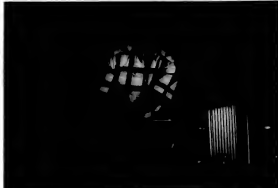
Umbaugh's stint at Bell Labs led to positions at TRW, Inc. and Computer Usage Co., one of the first software houses, in 1963. At CUC he met Carl Reynolds, recently retired MIS director at Hughes Aircraft Co. Reynolds was then president of CUC, and the company was working on a range of products, including early work on American Airlines' Sabre system and one of IBM's original operating systems.

In 1970, a team from CUC including Umbaugh and Reynolds went to work for Hughes Aircraft on a facilities management project. "In 1971, five of us from CUC displaced Hughes' senior systems staff," Umbaugh says. "If my major had been science and biology, that might never have happened." Umbaugh left soon after, but Reynolds stayed on for nearly 20 years as the company's IS director before stepping down this year (CW, Sept. 4).

That first rotation at Bell Labs provided the foundation for a broad-based view of business for Umbaugh that he says is too rare among IS managers today. It is one of two primary strengths he credits with moving him out of DP and into non-technical management.

"The guys who achieve escape velocity out of MIS into senior management will understand the financial workings of the business," he says. "There are too few that can communicate that information technology must be seen as an asset rather than as a cost. You need the guys who punch out the Cobol code, but that is not a spearheading to anything."

Umbaugh says senior management's view is critical to success, both of projects and careers. "If the president of your company sees computers as a necessary evil, when the going gets tough he will cut them out. If they are seen as an asset, they will be strengthened when times get hard."



LEWIS E. LEEBURG

Mission Land's Umbaugh stressed strong business ties before it was fashionable

Umbaugh's view of business and technology is one he has put to good use to ensure that preparation met opportunity throughout his career. After leaving Hughes, he went to work for Southern California Edison. SCE Corp., Edison's holding company, also owns Mission Land. After several years in the data processing shop there, Umbaugh was put in charge of DP and corporate planning. "It was unheard-of in utilities, and unusual anywhere at that time to have the data processing guy in charge of corporate planning," Umbaugh says. "It happened because I had a mentor in the company, and he wanted to force me to be more business-oriented."

Look for a mentor

Umbaugh credits retired Southern California Edison President Tom McDaniel with overseeing his career and helping him move through the ranks. "The concept of a mentor is not used enough in corporations today," Umbaugh says. "You can't rely on luck, on a computer truncating the 'L' on an application, to get the best people to the top of an organization."

A mentor is the second factor, along with his broad business view, that Umbaugh credits with achieving "escape velocity" out of MIS, but it is evident that he would have moved ahead pretty well on his own. Although he slings an irreverent sense of humor, Umbaugh is an intense man. His outside time is dominated by teaching IS courses at the business school of a small local college. The shelves in his office are lined with textbooks and journals on information technology that he has written or edited. He is quick to dissect a question and turn the pieces back on the source for explanation.

EXECUTIVE BRIEFS

Papers sought

Office automation specialists are invited to submit papers for the Office Automation Society International (OASI) 7th Annual Conference. Theme for the program is "Office Automation: A Multi-Disciplined Environment."

Topics can be related to office automation management, technology or applications. Some topics areas that could be addressed include artificial intelligence, career development, communications, desktop publishing, executive involvement, future of high technology, hard-

ware, software, standards, security, personal computers, image processing, local-area networks, information centers, office automation systems, optical storage, pilot experiences and word processing. Other topics can be addressed as well. Selected papers will be published in the conference proceedings. Some authors will be invited to present their papers at the conference.

A brief summary of the paper must be submitted before Jan. 1, 1990. The conference will be held June 13-16 in Falls Church, Va.

For more information, contact the Proceedings Committee, OASI, P.O. box 374, McLean, Va., 22101.

Mission Land has been around in various forms since 1913, but about three years ago, corporate parent SCE Corp. looked at the slow growth of the utility business and decided to put increased resources in the land development company. As director of data processing and corporate planning at Southern California Edison, Umbaugh sat on a senior management council and had a broad view of the business. He was asked to take the president's job at Mission Land.

"We wanted to get more serious, and we needed a fresh look at running the company," Umbaugh says. "I was glad for the chance. A midlife career change with no risk really pumps the juices."

The company has been blessed by being in booming southern California. Investments made in the 1960s, 1970s and early 1980s have contributed to a five-fold increase in equity over the last three years. According to Bank of America analysts, Mission Land possesses one of the best cash flows in the country.

"You can make mistakes in Southern California real estate," Umbaugh says. "But we worked hard and lucked out."

For Umbaugh, that's a familiar theme.

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EXECUTIVE REPORT

KEEPING UP WITH SERVICE EXPECTATIONS

Companies take a systems approach to customer service

BY J. SCOT FINNIE

It is 8:00 in the evening when suddenly you remember that you had wanted to investigate a possible mistake in the service charges assessed to your checking account. It's too late now to call the bank. All the offices have been closed for hours. So what do you do?

In most cases, the answer would be that you scribble yet another note to yourself about things to do tomorrow. If you happen to be a customer of Fidelity Bank NA in Philadelphia, however, what you would do is pick up the phone and dial the customer service number, where a service representative will take the information and initiate an inquiry, using an internally developed mainframe-based system called the Customer Relationship Inquiry Service System (CRISS). CRISS is a system that Fidelity has developed incrementally during the past several years, building outward from the skeleton of a pre-existing back-office system that did little more than track the volume of customer inquiries. Although the creation of CRISS was initially prompted by an administrative crisis that developed when Fidelity acquired another bank and found itself mired in the resulting tangle of records, the system has become a cornerstone of Fidelity's strategy for capturing and retaining customer loyalty.

The banking industry has never been known for placing a high value on the quality of service offered to customers, says Patrick Swannick, Fidelity's vice-president of customer service. In fact, he says, "The industry has historically been ridiculed for its lack of attention to this area." The prevailing attitude, Swannick explains, has been that all banks offer essentially the same products and services and suffer from the same failings, so customers really had very little choice.

Fidelity, however, decided



Fidelity's Swannick says service investments buy customer loyalty

that it could break away from the pack by using information systems and telecommunications to fuel an aggressive push in the area of customer service. The bank took its cue, Swannick says, from other service industries. Hotel chains such as Hyatt Corp. and Marriott Corp. elevated themselves within their industries on the basis of customer service. Federal Express Corp. turned customer service into a competitive advantage in the package-delivery business. American Express Co. built a strong base of customer loyalty the same way. "And we believed that we could also make a difference with a system like CRISS," Swannick says.

One of the things that CRISS has accomplished is eliminating the fragmentation of knowledge

that once crippled Fidelity's customer service operation.

"Three years ago, the way we handled service was in a decentralized environment with a different customer service area and phone number for every product we offered," Swannick recalls. "If you had a checking account, credit card and loan, you had to call different numbers for each service; each area knew only its own product. In many cases, the customer service reps didn't even know where to send someone for other services."

Now, all customer service representatives are linked through CRISS with a central information file, residing on the bank's IBM mainframe, so no one who receives a call from a customer can justifiably say, "That's not my department."

Equally important, branch and loan officers do not have to be surprised by customer problems. All such personnel have the ability to access CRISS records to check on who has been calling about what outside normal office hours.

Working overtime

In fact, since the installation of a voice-response system almost two years ago, some types of customer services are offered even beyond the extended weekday and Saturday hours that the customer service department keeps. With the addition of hardware from Syntellect, Inc. in Phoenix, Fidelity now offers its customers the ability to check on account balances and loan-payment status automatically using their own phone keypads.

According to Swannick, "There's just no end to the types of customer services you can offer with a system like this. Frankly, we're not using it to its full capability."

In general, corporate America is just now becoming aware of the importance of customer service and how information systems can be used to support it. This awareness is beginning to translate into action.

Clearly, interest in customer service is on the rise. In a recent survey of top executives from Fortune 500 companies, Forum Corp., a Boston-based management consulting firm, found that "quality of customer service" was picked as the top-ranking performance issue by 86% of respondents, beating out obvious favorites such as long-term growth, employee productivity, period financial results and market position.

In a related question dealing with the relative importance of various external factors, 94% ranked "customer need/preference" first in a field of 14. Significantly, the runner-up, "competitor activity," was selected by only 56% of the respondents.

Experts offer many hypotheses for what is causing the increased emphasis on customer service, but most concur that the chief factor at work

INSIDE

How GE stays close to customers

Page 103

Fashioning garments to fit demand

Page 95

Finnie is a free-lance writer based in Ridgefield, Conn.

Customer

FROM PAGE 91

here is competitive pressure.

"Many companies are able to replicate every product and service their competition offers in a very short time," says Mary-Anne Rasmussen, senior vice-president of service quality at New York-based American Express Co. "The difference is how they can provide that quality of service, how they deliver on their promises."

In many cases, firms have found that IS holds the key to improving on promise delivery.

IS departments support other departments using systems to promote customer service and develop software to carry out

billing document that comes through American Express' doors is digitized and stored on optical discs. The original paper version is then discarded.

Country-club convenience Image-processing allows American Express to offer what it calls enhanced country-club billing. Rather than giving its customers the original carbon of all bills it receives from merchants each month, the company prints condensed versions of them on regular-size pages.

The process is faster and more efficient, and the company says 90% of its customers prefer this method. It also greatly reduces the likelihood that a record of charge could be sent accidentally to the wrong customer.

gation to accommodate technology. And it's all been driven by customers."

The IS department began its quest to improve customer service in late 1985, he recalls. It began with the premise that if IS could offer something that gave better service to their customers, that would take priority over cost benefits.

The only downside to IS involvement in customer service, according to Erickson, is that the infrastructures IS builds blend into the process and disappear from view.

"The right is that the work that IS is doing is not always perceived as customer service work," he adds. "It is not visible to the customer and that can be frustrating to IS managers. So much so, that they keep my office on the first floor — they're afraid I'll jump out," he quips.

Company executives often do notice the contributions, however. Executives at many firms say that they are unable to talk about customer service without talking about their IS departments.

"Computers are an important part of everything we do here," says Terry Wilson, vice-president of customer relations at mail-order catalog Lands' End. Like many successful catalog and direct marketing companies, the Des Moines, West-based Lands' End puts a lot of emphasis on customer service.

Because sales and product fulfillment performance are important determinants of a catalog customer's perception of service, catalog houses rely heavily on their computer systems. Catalog companies must be able to check order status; change, cancel or delay orders; change addresses; and provide a host of other customer service-oriented functions requiring sophisticated computer systems.

Functions such as on-line inventory control, computerized inventory management, automated customer picking and bar-code control of shipping methods help Lands' End get an order to a customer in only a few days.

Sell me, don't just tell me Improved efficiency is not all that matters to customers, however. People buying products by phone do not just want fast response — they also want information about the merchandise that they cannot glean from the pages of a catalog. In other words, they want to talk to salespeople, not order-takers.

This is another area, according to Wilson, in which IS can step into the breach. "All of our product information is kept on an extensive database to which our customer reps have access," he says. "When customers call wondering how many pairs of long underwear we're going to shrink, how much care it needs, whether its sizes tend to run large or small, our reps can tell them be-

cause they have the information on-line."

Capturing information that can be fed back into departments to improve procedures is, of course, just as important as collecting information to give out. According to Curt Barry, a Richmond, Va.-based management consultant specializing in data processing systems design for retailers and direct marketers,

THE REAL challenge we've had at UPS in recent years has been changing the face of the company's organization to accommodate technology. And it's all been driven by customers."

FRANK ERBRICK
UPS

some catalog firms are also using information systems for functions such as tracking lost sales resulting from stock shortfalls.

The bottom line, says Bro Utal, co-author with William Davidson of *Total Customer Service: The Ultimate Way*, is that "companies need to do more to stimulate complaint behavior — and not by turning out worse products or services."

Instead, companies have to start seeking out customer input — good and bad — in organized ways, so that they can better tailor their products and services to market requirements.

In order for this to happen, customer service really needs to become a more organized and

pervasive activity than it has been. Utal, a New York-based consultant specializing in technology management, advocates doing away with customer service departments, making customer service everyone's job.

"Customer service departments are frequently photo shops whose principal purpose is to shield the corporation from problems, not solve the customers' problems," Utal says. "And one of the vices of having a customer service department is that it allows those in other departments to say that customer service isn't their job."

Information systems that automate the collection, communication, management and analysis of customer data can be a major force for spreading the message of customer awareness throughout an organization.

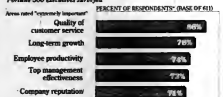
Customer service experts believe that getting an accurate, comprehensive report on customer service complaints is already becoming as important as sales report, which has always been vital to most companies.

Chairman Ted Pampieris at Tweeds, a Patterson, N.J.-based fashion apparel catalog firm, says he believes customer service reports merit close scrutiny. At Tweeds, monthly reports list all customer calls, with about 100 possible reasons for these calls, some of which are good — such as a request for a catalog. "Each month, I check closely to make sure that the good reasons for calls are increasing and that the bad reasons are decreasing," Pampieris says.

Tom, don't burn Sometimes, analysis of customer complaints can turn up new market opportunities. John Goodman, president of Technical

Performance gauge

The customer is key in measuring a company's performance, says Fortune 500 executives surveyed



*Multiple responses allowed

Source: The McGraw-Hill

Source: The McGraw-Hill

customer services. Also, some IS departments get involved in this area by managing customer and product information databases, using systems to measure customer service performance and using statistical analysis and other means to analyze complaint or transaction data to spot customer service trends and avert bottlenecks.

American Express was an early starter, beginning the quality/service program that Rasmussen heads up in 1976.

That part is really just a prelude, though, according to Rasmussen. The job will not be over until customer service becomes a clear and present objective for every person in every department of the company.

Toward that end, American Express has routed some of its best technical and business thinkers onto a project dubbed "Genesis." Now three years old, one of the Genesis project's main goals is the standardization of data structures throughout the company's worldwide organization to facilitate the assembly and maintenance of comprehensive and uniform customer files.

Another major focus of the project is finding ways of turning state-of-the-art technologies into customer applications.

American Express has some experience in that area. It was one of the first firms to apply image processing to the cause of customer convenience. Every

This technology is also starting to play a role in customer service at United Parcel Service of America, Inc., headquartered in Greenwich, Conn.

Last month, UPS implemented the first stage of a plan to facilitate package tracking through the use of image processing. According to Frank Erickson, vice-president of IS, 25 UPS operating centers around the country are equipped to scan and upload information from digitized routing labels, which will help customer service representatives (CSR) locate a package in transit.

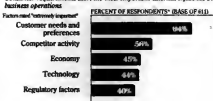
Images of the labels, including recipient signatures and time and date of delivery, can be called up on-screen in less than four seconds by representatives at 65 customer service centers.

The company plans to complete its label processing system, expanding it to operating centers nationwide, by early December. Down the road, Erickson says, UPS hopes to be able to make all its tracking information, including the digitized images, available to its corporate clients through electronic data interchange.

According to Erickson, more and more companies are becoming customer service driven, and customer service is becoming a technology driver. "The real challenge we've had at UPS in recent years has been changing the face of the company's or-

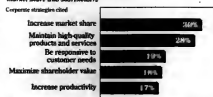
Demand-sensitive ...

Customer requirements exert the most important external influence on business operations



... but still ruled by the bottom line

Despite an increased focus on customers, companies remain devoted to market share and shareholders



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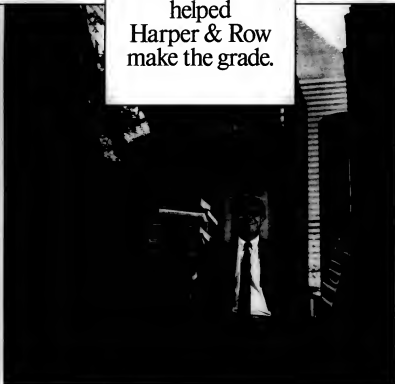
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Assistance Research Programs, a Washington, D.C.-based research and consulting firm, recalls when one of his clients, a pharmaceutical company, analyzed customer service data by type of request and found that a lot of customers were calling up and asking for sunscreen in December.

In the middle of winter, not many stores carry sun products, but a lot of people vacation in tropical climates at that time of the year and want to be prepared. Until the analysis was done, the company did not know this was an issue, and the only thing the CSRs could do was give the customers lists of stores they could try.

When the frequency of this type of inquiry came to light, the company decided that a better response would be to offer to send the product by mail. Much to the company's surprise, this service gesture garnered not only good will but also a significant amount of revenue.

Similarly, using information systems to track and analyze customer input has been known to turn up process problems that, while easily remedied, would have been hard to spot by any other means.

More than saying you're sorry

At Fidelity, for example, Swanick says that CRISM makes it possible to isolate patterns in complaints and track them back to their root cause. "Instead of just handing a customer back the amount that he has been overcharged on a money market checking account and saying, 'Sorry. We hope it doesn't happen again,' we can figure out that there seems to be a problem with the calculations for all interest-

bearing accounts that are on a mid-month billing cycle and have a programmer fix it."

The strong movement toward information system-based customer services can affect IS departments in potentially profound ways.



MARYANNE RASMUSSEN
AMERICAN EXPRESS

According to Garret Sheldon, president of the Potomac Group, an information technology consulting company in Cambridge, Mass., IS departments are already devoting a lot more resources to support of services for business customers than they used to. Sheldon, who worked as a systems developer at MIT for 13 years, says that IS departments in companies with strong service orientations currently devote about 30% of total main-frame to support that function. And, he adds, that percentage is likely to rise even further: "What used to be an MIS department is now becoming a customer service department."

Both IS managers and consultants note that developing and supporting customer service systems not only requires extra time but often fundamentally alter operating methods. According to Erick, "For things that are unique and indigenous to the company, as customer ser-

"MANY COMPANIES ARE able to replicate every product and service their competition offers in a very short time. The difference is how they can provide that service, how they deliver on their promises."

vices applications often are, the programming is more challenging, and the applications tend to require the kinds of systems that cause you to logically alter the way you do business." Furthermore, he says, once customer service gains a foothold in an organization, the possibilities for process improvements and new service offerings are almost unlimited.

Another effect of customer service on IS can be the blurring of functions between departments. "You can't provide responsive, high-quality customer service if you are highly bureaucratized and have strong functional lines," Uttal says.

That blurring can also carry across company lines. "In the 1970s, everything was run out of IS. Since then, the move has been toward decentralizing IS and getting users involved," Sheldon notes. "Now, because of the emphasis on customer service, we are beginning to decentralize across company boundaries by putting PCs and distributed capabilities into customers' offices."

American Express is doing this with airline companies. Because cardholders often use the card for travel expenses, American Express works very closely with airlines. When customers have complaints about airline services and billings, they often bring them to American Express.

"To try to minimize the inconvenience to the airlines and expedite solutions," Rasmussen explains, "we set up an online inquiry and request system with the airline companies so that we can move from our information database right to the airline. If we need to make adjustments to airline records, we can make them automatically on-line."

If you are an IS manager facing an increasing emphasis on customer service at your company, what should you keep in mind? Two things, Erick says. First, don't let the marketing people force you to try to do something that you know you cannot do. Second, deliver on your promises. "Not offering services is intolerable, but offering services that don't work is positively anathema. There's no sure way to be out of business than breaking promises to your customers." ■

How technologies spawn new customer services

Many kinds of technologies are being drafted for the cause of customer service, frequently combined in entirely new ways.

In turn, these combinations of telecommunications and data processing technologies are producing some innovative variations on customer service. Integrated Services Digital Network services such as caller identification allow American Transtech, located in Jacksonville, Fla., to provide contract customer assistance services for large corporations, such as Pan American World Airways and Ford Motor Co.

One of the services American Transtech provides is called Dealer Locator. The way the service works, if a Ford owner moves to a new area and wants to know where the nearest Ford dealer is, he can call an 800 number to find out. When he calls, his phone number is identified by caller identification and a computer search matches the location of the phone number with the location of the closest Ford dealers. Their names and addresses pop up on the screen.

At Fidelity Bank, Patrick Swanick is looking at the possibility of enhancing the bank's voice-response system to permit automatic calculation of likely interest rate yields on certificates of

deposit or monthly payments on loans by type and length for customers who phone the bank's automated inquiry hotline Service.

As vice-president of customer service, Swanick is also evaluating the idea of offering customers the option of receiving facsimile statements on request by linking the computer, telephone and fax machines. The appeal of such convenience, Swanick says, could be strong enough to support offering this as a fee-based service.

At United Parcel Service, the next step is an adaptation of Loran technology that will allow the company to electronically pinpoint the locations of its delivery trucks and compete head-to-head with rival delivery giant Federal Express Corp.

UPS, according to Gene Hughes, manager of strategic planning, is about 80% finished with a project that is creating a database containing a map of its delivery area throughout the U.S. That database, when used in combination with the Loran tracking technology, will allow it to build computerized maps with lights that move as the trucks move. In that way, UPS will always know, to within a few hundred feet, exactly where its trucks are located, so it can quickly deploy the closest truck to a customer requesting immediate pickup for overnight delivery.

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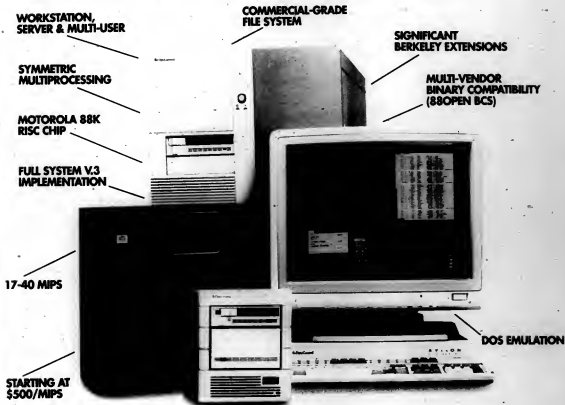
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INTERVIEW

Consumer-oriented production

*Just-in-time methods reduce costs, says
Du Pont's Peter Butenhoff. Quick Response
goes a step further to get the right product
to the right customer at the right time.*

In retail goods industries, customer service is closely intertwined with a strategy called "Quick Response," which involves using a variety of information and communications technologies to collect better and more timely information on market demand. It also speeds the flow of that intelligence through the production and delivery channels.

Peter Butenhoff is director of business development and international trade affairs at Du Pont Co.'s textile fibers department. Butenhoff has a long-standing involvement in the development of the Quick Response concept, including participation in the Crafted With Pride in America Council. He spoke recently with *Computerworld* Associate Editor Laura O'Connell.

What are the objectives behind the idea of Quick Response?

The main objective is to have the right product in the right place at the right time and the right value for the consumer.

The idea of Quick Response was first developed in the early and middle 1980s, at a time when the retail apparel industry was faced with double-digit growth in imports. We were very much concerned about whether we were even going to have an industry in the 1990s.

We knew that there were a lot of hidden costs associated with importing and felt that we should be able to capitalize on our proximity to market here in the U.S. The real key, we realized, was finding a way to eliminate all the waste that results from long pipelines and all the mistakes that are made along the way.

Exactly how is this accomplished, and what role does information systems play?

Timely, accurate communications are right at the heart of making Quick Response work, and that's where the systems come in. They capture data about size, color and style at the cash register, through the use of bar codes and scanning. They also allow us to build databases that can be analyzed to help make better decisions on what

products should be stocked on the shelves and even how they should be displayed.

You can almost put systems on automatic, as far as replenishment is concerned, and either replenish the basic items as they sell out or replace them with new items that are tailored on the basis of the information you've accumulated. That's a little more quantitative than the seat-of-the-pants planning that drives so much of retailing and product development these days.

You mentioned bar coding and scanning. What other technologies are part of Quick Response?

One of the others that's really critical is just-in-time delivery and what I call short-cycle manufacturing, which you can do with a modular system or teamwork approach. For putting basics into inventory, a slower, methodical manufacturing process works fine; it's just a question of what's the most cost-effective way to run the plant. But when you get into trying to respond to fashion, time is of the essence, and that means having a flexible manufacturing operation.

Of course, that doesn't do you any good unless you've got the fabric and other materials you need to put into the plant. So you also must have partnerships with the suppliers of the fabric and other materials in order to be able to execute it all on a short time cycle.

How does what you are talking about differ from what the automotive industry is doing?

The car industry is one that has been well publicized as being very active with just-in-time delivery and partnering with suppliers and use of electronic data interchange to facilitate those activities. In fact, they're further along in that than we are.

The difference in Detroit, though, is that it was really more of a cost-reduction-driven strategy than a consumer-service-oriented strategy. Even though General Motors and others had gone to just-in-time delivery of parts, they had not gone to Quick Response; they cannot build a custom-ordered car for you. Yet now they are beginning to move

in that direction as well. I think they're beginning to understand that Quick Response is a partnership relationship; it's not just just-in-time delivery, which is really a cost-driven strategy.



How can implementation of Quick Response methods draw companies closer to customers?

I think Quick Response is a very logical, fairly straightforward strategy for better serving the needs, wants and desires of the consumer.

If you're a retailer and you're vertically integrated, you would delay decisions on what to produce until the last possible minute. For fairly basic items, you might make them pretty far in advance and at the lowest cost mode and build some inventory to serve the customer out of. For higher risk items, like the more fashion-oriented items, you'd delay the decision as long as possible so that you could accumulate as much information about what was selling well in the marketplace, what the consumer trends were.

By doing that, you minimize your mistakes and, hence, your markdowns and lost sales at retail, because you'll have more of what the consumer wants to buy available in the right selections.

Is Quick Response tied to the expanding interest in providing better customer service?

Yes. And I think that's what will let it evolve in the future into the fashion side of the business. Some of the really successful retailers in the fashion side understand that and are beginning to practice it. I think the people

who continue to work very far ahead with little understanding of what the consumer's really interested in are going to find themselves continually caught in the problem of having short skirts when their clientele isn't ready for short skirts.

How actively should IS personnel be involved in these efforts?

The systems people in any organization have got to take a lead. They cannot do it alone, but they've got to do it. They can develop the systems; they can educate their organizations and if they are empowered by their corporate management, they can even set up demonstration projects in one department or another to show the benefits of using those systems to really implement Quick Response.

You really need a broad-based corporate task force to oversee a project like this, making sure programs are started, monitored and used properly, with the results shared. The systems folks are in an excellent position to make a significant contribution to these efforts and, by extension, to the business.

Has Quick Response improved Du Pont's customer service?

Yes. It has improved our service to customers who are ready to commit to the kinds of linkages and sharing of information I've been talking about. We're aggressively driving that way, with both our customers and suppliers. On the whole, I'd say that it has improved our sensitivity to their strategies and issues.

Can you measure the benefits?

What we've seen in all the Quick Response projects is that sales increase a minimum of 20% and up to 50% when you put these methods into practice. It simply means being in a better in-stock position with the things that the consumer wants to buy. Therefore, you end up with a happier consumer because they can find what they're looking for.

What is the major stumbling block?

This isn't something that's easy

Continued on page 102



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The 5000 series of channel extenders can be installed in less than one hour.

LinkMaster 4174 controllers interconnect 3270 terminals, ASCII terminals and PCs to multiple hosts, either DEC or IBM. And LinkMaster products enhance network management with direct NetView interface.

These are just a few highlight examples of McDATA's LinkMaster network solutions at work.

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Must the voice be human?

A well-designed combination of voice-response technology and tightly integrated mainframe databases can work wonders on the efficiency of a customer support department. However, don't expect the idea to be an easy sale with top management, says Michael Kennedy, a senior consultant at Arthur D. Little, Inc. in Cambridge, Mass.

"We generally find that higher management opposes the use of voice-response systems," Kennedy says.

"They feel that such systems take away the personal touch and can make the company seem insensitive to customer concerns."

In fact, he notes, customers are likely to resent long periods waiting on hold or rushed and incomplete explanations more than being routed through an automated response system. To prove that point, Kennedy suggests having doubting executives try to place billing inquiry calls themselves. Objective evidence can also be gathered with voice traffic studies to track the number of calls abandoned on the way to a service representative.

The real key to making an automated response system effective is in the planning, Kennedy says. Before putting a voice system in place, a firm should do a careful analysis of why people call and which calls truly require human assistance.

Where the lines are drawn will depend on the company, Kennedy says; such decisions should be driven by the goals and priorities of the business rather than the technology.

What does not vary is the fact that in every business, there are some contacts that can be handled just as satisfactorily by a voice-response system that costs 60 cents an hour in run, as by a service representative whose hourly cost is \$40.

Butenhoff

FROM PAGE 98

to do. You must have partnerships with the suppliers [of all your materials] in order to be able to execute it all on a short time cycle. It's a long tortuous supply chain, and it's characterized by a lot of adversarial relationships.

So you need Quick Response working through the whole chain, from suppliers through customers?
Oh, yes. I think many people in the industry look at Quick Response as primarily a systems issue in a replenishment approach. But as soon as you get beyond basics, it really is going to require a vastly different way of working with the supply chain.

You're going to have to have relationships with the whole chain in order to make that kind of a partnership really work well.

Is that going to require substantial changes in operations? Or can you implement Quick Response over existing procedures?
I think it really requires a very fundamental change in the way

many retailers work. It's going to require making commitments and holding open the bay for your suppliers to work very close to the selling season and treating them as suppliers of first choice. The culture of the industry usually goes against that. And senior management has to understand the different way of operating that's implied by Quick Response. *



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How GE uses technology to turn back the clock

BY LARRY STEVENS

General Electric Co. invests a lot in creating a corporate persona that customers can relate to. When it runs television advertis-

Stevens is a free-lance writer based in Springfield, Mass.

ing for its lighting products, for example, GE delivers soft-focus portraits of family life that warm up the already fuzzy slogan, "We bring good things to life." And at the GE Answer Center in Lexington, Ky., one of the first and most ambitious customer support lines in the country—a

considerable array of information technology is deployed to create an old-fashioned atmosphere of down-home service.

"Our whole purpose," says N. Powell Taylor, general manager of the Answer Center, "is to make the customers feel that we care about them and that, al-

though we're a big company, we are accessible."

Judging by the numbers, the message is getting through. When it opened its lines in 1981, the center was handling a modest 200 calls per week and employed 20 staffers. Today, it has 250 employees handling more

than 6,500 calls each week relating to 8,500 products spread across 120 product lines. Customers call for information on products prior to purchase, for the location of a local service center or retail outlets and—the most frequent type of call—for instructions on how to use a product that they own.

With the information systems and communications infrastructure it has created over the past eight years, the center is able to answer 95% of all questions on the first call and, at the same time, glean valuable information about the customer base.

You wish, I'll dry

At the heart of the system is a custom-built mainframe text retrieval system, complete with a database with the answers to more than one million questions. When an operator gets a question such as how to eliminate film on dishes, he selects keywords from the customer's request and types "film," "dishes" and "dishwasher" into his operator console. A successful search will yield a paragraph or so of information that is read back to the customer over the phone.

Although the system cannot anticipate every question, it has an extremely high hit rate. The 150 front-line operators access and then read aloud a paragraph that answers the customer's question 80% of the time.

If a question is too difficult for the front-line operator, the call and a summary of the question is transferred to one of 50 technical specialists on-site, who are more familiar with the database and GE products. To avoid redundancy, the specialist also receives a description of the search procedures already tried.

Using more sophisticated, or perhaps simply more persistent, querying of the database, these specialists are able to provide immediate answers for about 75% of the calls routed to them (about 20% of the total calls received by the center).

The remaining 25% must be researched further. The specialist promises the customer a return call and sends the information through the network to the Training and Data Group, which is responsible for investigating tough subjects and entering fresh data into the system when products are introduced or changed or a question not covered in the database needs study to recur with some frequency.

Requests for product literature are forwarded electronically from the front-line operators to the company's Literature Fulfillment House, where the proper manual or brochure is selected and a mailing label is automatically generated.

If a customer wants the name of a local service center, the front-line operator accesses the location by ZIP code, reads it to the customer and then forwards

se if it's always stuck in traffic?

trolled access features to protect and secure your important data.

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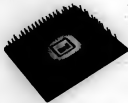
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as you near each goal. Set it out of reach all over again. ■ Today, Motorola's standard is Six Sigma quality in all we do by 1992. In statistical terms: 99.9997 percent perfect. Our progress has been swift. Recently, Motorola shared the first Malcolm Baldrige National Quality Award, given by the President. ■ Total customer satisfaction, our goal, is now on the horizon. We dare not rest in its pursuit.



In 1988 Motorola was a winner of the Malcolm Baldrige National Quality Award.

Building On Beliefs



MOTOROLA

EXECUTIVE REPORT

the customer's name and address, via a telecom network, to the service center.

Whenever some follow-up action is required from a service center, the operator can elect to "close-loop" the request, which causes the system to signal a supervisor if the follow-up action has not been completed in a specific time period.

The text-retrieval system, which boasts 4-sec. response times, took the GE Answer Center 11,000 man-years to develop in the early 1980s; it is now almost entirely user-driven, according to Carole Stagnola, manager of information systems. This allows the three analyst/programmers at the center to work on refinements and enhancements.

The most recent such project was completed six months ago when all GE de-



GE's Answer Center

partments were given direct access to any of the statistics generated by the center's database and the ability to create their own reports.

Product development teams use the

information to uncover areas in which customers are experiencing problems that may indicate the need for a design improvement. Marketing groups scan the statistics for clues to customer interests. Advertising departments look for the times and dates when customers phone about specific products to help them judge which media campaigns are having the biggest impact.

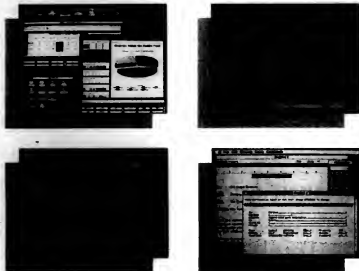
The largest new task that programmers will be responsible for is a conversion project to move all the data from its current residence on a Bull H. N. Information Systems, Inc. SDFS90 mainframe system to three IBM 3090s run-

ning DB2. To avoid overloading the center's resources, Stagnola is phasing in that conversion. The first stage was completed a month ago.

Besides launching new projects, programmers monitor the system. Whenever a new service is added or a large amount of new data is keyed in, the network is checked to ensure that it maintains a subsecond response time. Programmers recently instituted a system that allows supervisors to rate the quality of answers customers are receiving.

In a very real sense, the goal of Stagnola's group is to make the system appear as simple as possible to customer and internal users alike. "Technology should be as invisible as possible to those who use it," she says. ■

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Predesign checklist

What's different about designing customer service systems? A lot, says Bro Uttal, a New York-based consultant and co-author of *Total Customer Service: The Ultimate Weapon*. Uttal offers the following recommendations for information systems managers considering customer service projects:

- Be aware of the role the customer will play. Significant efficiencies can be gained by involving the customer in the service. For example, investing in self-diagnostic equipment could allow the customer to fix problems on his own.
- Consider the degree to which you want to centralize. Unlike applications for which the best solution is either central or local control, customer service often demands a mix of both. It may make sense to come up with two systems: a centralized problem-solving facility and a local system for field offices.
- Response time in a centralized facility is important in any application. But in customer service, it is even more critical. You have a relationship with the customer, and you do not want to jeopardize that by making him wait for service.
- Records of customer transactions should be designed to avoid redundancy. Instead of mixing each person who handles a request the sequence of access commands, you should design a system that allows easy and virtually instantaneous transfer of the complete records between different workstations.
- Understand the environment you are in. Often, customer service representatives are poorly paid, part-time workers who have neither the skills nor the authority to solve many of the problems customers bring to them. This means that an effective customer service information system will have to cross organizational boundaries because the customer service group will not be able to respond effectively without access to other departments.

IN DEPTH

Beyond hypertext hype

What's going on behind that pretty user interface?

BY LIORA ALSCHULER

How many articles on hypertext start with a gee-whiz scenario such as "Imagine being able to read every word ever written about coffee machine maintenance, delivered fast and just the way you like it, with a few simple key-strokes?"

Hype has threatened to overwhelm hypertext ever since the publication of Ted Nelson's brilliant 1974 cult classic, *Computer Lib/Dream Machines*. In this trippy, free-form book — cleaned up and reissued last year by Microsoft Press — Nelson uses drawings, various type sizes and other devices to describe a new world in which all information is contained in one big hypertext (which he describes as "nonsequential" writing). The book's original hand-drawn cover featured a caped, flying hippie and this hint of drama: "Super-student Meets Hypertext!"

Given such science fiction-like roots (Nelson repeatedly quotes from the film *2001: A Space Odyssey*) and later promises of information delivered "your way," it is little wonder that many organizations have dismissed hypertext as a nice but impractical daydream unsuited to everyday applications. Indeed, many first-generation hypertext applications offered an attractive user interface but lacked supporting tools.

As a result, information systems managers tend to fall into two groups: those who have accepted hypertext uncritically

Alschuler is project manager of emerging technology at Milken-Samuelson, Inc., a New York technical publishing house.

and have been burned and those who cannot be bothered to fight through the promotional smoke. Both groups need to ask, "Is hypertext more than just a pretty facade?"

The answer — with a few qualifications — is yes. Some serious problems remain, however. In the two years since the release of Apple Computer, Inc.'s Hypercard and resurrection of Nelson's hyperdream at the Hypertext '87 conference, several full-scale business and technical hypertexts have emerged. Notable examples include an electronic version of the *Oxford English Dictionary*, a reference work called the "Engineering Data Compendium" and a new Ford Motor Co. project called the Service Bay Diagnostic System (see story page 111). Moreover, a new generation of hypertext products, many of which use expert systems or databases to handle underlying tasks, are starting to appear.

Discussion among vendors, users and researchers continues this week in Pittsburgh at Hypertext '89, a three-day conference sponsored by the Association for Computing Machinery. Sessions will explore key topics such as hypertext architectures, interfaces and applications.

Lessons learned from such gatherings and from pioneering organizations can teach volumes about what does and does not work in hypertext and how much it all costs. If the right lessons are learned, many more solid commercial applications can be expected to fall to Earth in the near future.

Hypertext hype is attractive because it addresses a wide-



MARK FISHER

spread need:

Many organizations require a better way to access complex technical information. In many companies, such information has outstripped the capacity of traditional documentation to describe it.

Computer documentation, for example, often occupies more bytes than it describes and can be outdated before it is published. Hypertext offers an attractive solution.

"For millennia, we have had

to structure our information to fit the confines of paper," explains promotional literature from Owl International, Inc., a Bellevue, Wash., publisher of a hypertext product called Guide, which the company says is the first commercial hypertext for personal computers. "But ... we can now give documents many shapes. ... We can

- Lack of underlying structure a problem
- Books still better for many uses
- Embedded expert systems show promise



Frusthouse Forte Hotels
sleep easier since AT&T
Computers checked in.

San Diego, California
April 27, 1989

Trusthouse Forte needed to automate its reservations and property management system so it could manage its properties more efficiently and improve customer service. AT&T and AT&T Authorized Value Added Reseller, Encore® Systems, Inc., created a solution for over 500 hotels by integrating the reservation system with a property management system. AT&T's Jerry Trapp and Encore's Mike Otten join Trusthouse Forte's Bill Hanley to retell the story.

Bill: Dated. That's how I would describe our old reservation and guest billing systems. They just couldn't reserve rooms or bill our guests fast enough. On top of that, some hotels were manually booking rooms while others were running a smorgasbord of property management software packages.

Jerry: Because nothing was plugged into your central reservations system. Your guests were not getting the service they deserved. And it was driving your hotel managers nuts as well.

Bill: And when your customers don't get service, that's when you lose their business. You can see why I needed a lodging expert like AT&T, who understood my business well enough to customize a bulletproof solution to it. Who could seriously integrate software and hardware without trashing the huge investment I'd already made in my current system.

Jerry: You needed to turn the dated system into something you could really use. Fortunately AT&T has solved a number of problems like yours in the lodging industry. And we chose to team up with another lodging pro like Encore Systems, Inc. Together we could really zero in on your special software demands.

Mike: That's right. We knew right off

that you needed a lot of flexibility built into the system. For example, it had to be able to be used at any size hotel—from 40 rooms to 400.

Bill: Which is critical. We want the smaller hotels to get as much out of it as the large hotels. And they are. Now our hotels have the ability to create guest profiles. Plus customer billings from restaurant to phone to movie charges are all automated. Now our managers can spend more time on their most important job—keeping our guests happy.

Jerry: Another nice advantage is that they can, in seconds, interactively reserve rooms all over the world. And then monitor and report results back to headquarters. So headquarters, in turn, can use that data intelligently for designing future marketing programs.

Mike: The quality of service you're giving your guests is soaring.

Bill: You said it, Mike. In fact, we've heard good things from the hotels that have the system rolling. Service standards are better and reservations are made in a flash. And satisfied guests are what we want most in this business.

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Computer Systems

structure the document to fit the information."

A functional definition of hypertext is an electronic text that lets users skip between related but noncontiguous pieces of text. The logic behind the approach is that, as one reads such documentation front-to-back, Hypertext lets the author, and in some cases the reader, link any piece of text to any other piece of text, in any order. Proponents hold that this is the best way to find needed material quickly. Technical information such as reference guides, maintenance and procedural manuals, specifications, proposals and encyclopedias are considered ideal candidates for hypertexts. But if hypertext is all it is cracked up to be, why aren't organizations' bookshelves filling up with hypertexts to replace yards of traditional documentation?

Behind this pretty face . . .

One basic problem is that the first generation of commercial hypertexts did not replace the book structure with anything better or even as good. So far, old-fashioned books are winning.

"If you can reach for a book and get an answer more quickly, you don't need hypertext," says Tom Renick, an artificial intelligence engineer and president of Big Science, Inc. in Atlanta, which is working on the problem of computerized text delivery. "There is no justification for hypertext unless it is faster, cheaper and more up-to-date."

One problem slowing the acceptance of hypertext has been a tendency among users to be wowed by its pretty face, ignoring what is behind the initial interface.

According to Janet Walker at Digital Equipment Corp.'s Cambridge Research Laboratory in Cambridge, Mass., when most people think of hypertext, they think only about the interface, forgetting the underlying data structure and the tools required to create that structure. Thus, Walker, a cognitive psychologist who herself has written technical documentation, explains that buyers are not as critical as they should be.

Another big problem is that first-generation hypertext applications tended to overstate what could be delivered in a larger project. Small-scale hypertext demonstrations often look great, says Bob Glushko, senior research scientist at Search Technology in Atlanta, but the reality often is different. The reason is that hypertext demos made with off-the-shelf software do not scale up to larger projects very well.

Although a demo connecting a few pieces of information, paragraphs or pictures can be assembled while you watch, a full-scale hypertext requires thousands of links between thousands of disparate pieces of information. Therein lies the big problem with many first-generation hypertext packages: lack of structure.

Text structure refers to headers, footers, subtitles, use of italics and boldface, tables of contents, indexes, headings, subheadings and other publishing conventions that help readers locate the desired text from the thousands of pages. Glushko says unstructured hypertext is fine if you want to browse from the history of the buffalo nickel to Buffalo, N.Y., to Buffalo

Springfield to buffalo mozzarella. But business and scientific applications seldom wish to do such free-form linkages.

To make hypertext work for business, methods are needed to guarantee that users can find the correct information quickly without wading through extraneous material. The reader needs to see all relevant portions in an order that makes sense. Real-world demands require a system to create such links. Even if you manage to insert all needed links manually, unless you track them or arrange them systematically, users will not be able to verify or update the links.

BUT IF HYPERTEXT is all it is cracked up to be, why aren't organizations' bookshelves filling up with hypertexts to replace yards of traditional documentation?

In their rush to break away from "linear" books, hypertext developers have given themselves the task of reinventing the wheel. Their biggest challenge is to put meaningful structure back into the on-line presentations. Commercial hypertexts provide tools to link disparate pieces of information but provide no built-in structure for doing so. Unfortunately, many first-generation commercial hypertext programs required rebuilding text structures by hand.

When hypertext links are put in by hand (called "hand-crafted" or "hand-tagged" hypertext), no mechanism exists to ensure that links will occur between all the pieces that need to be linked, that users can go from piece to piece in an orderly manner or that pieces can be updated systematically. A hand-tagged hypertext not only lacks an updating mechanism, it also makes users update the links themselves. The problem is that links requiring updating may not themselves be documented.

Unfortunately, most commercial hypertext programs — Guide and Hypercard, for example — require the hypertext author to manually connect and structure all text and graphics. According to Walker, what most people call hypertext is actually a "point-and-shoot" interface. Such an interface lets authors position the cursor on a word, click or press Enter and instantly bring up a related piece of text. Users of such systems often forget about the underlying structure of the text and what it takes to create that structure.

Expert systems offer hope

Another problem is rooted in the difference between the nature of books and computer screens. Because word processors and desktop publishers format text for printers — not for on-line retrieval — readers cannot flip through page headers in a word processor the way they would with a book.

In electronic text formatted for print, readers can search for and find a character, word or word string, but this does not convey text structure. Faced with long, undifferentiated character strings of word processors, it is easy for users to get lost in unstructured hypertext. What are the alternatives?

A number of organizations have turned to artificial intelligence and expert systems to structure hypertext. As an alternative, corporations of all sizes are start-

ing to see text-to-hypertext conversion as an area that could yield big savings in time and money while improving presentation quality. The second generation of commercial hypertext products that come rather than ignores text structure will soon be available.

While not everyone agrees that text-to-hypertext and diagram-to-diagnostics can be automated, most agree that using a document's existing structure is better than creating a whole new structure for large on-line presentations.

Hypertrons from Texas Instruments, Inc., for example, automates hypertext

translation by creating a database. Hypertrons creates a database structure that works with the ASCII file of the original text and that can be used to support any hypertext interface, including Guide, Hypercard, Sun-based KMS or Discover, a hypertext interface developed by TI.

TI's hypertext experience dates back to 1980, when the "Speak-and-Spell" educational tool became the model for an error-reducing hypertext system for the military, later scrapped because it was too expensive to create applications.

Steve Morris, a TI engineer on the original project, says that hand-tagging text is a "black-art" that has given hypertext a "bad rap" and has priced it out of the market. The biggest problem in creating an affordable system, Morris says, was to capture the implicit intelligence of the printed text. "I used to open a reference book to the first picture. I was never taught how to use its structure, but the structure is 90% of the story."

Hypertrons and similar text-to-hypertext systems now under development adhere to a book's structure without recreating it by hand. Now available as a service product, TI will offer the product at a price tag of around \$500, through a word processing vendor, later this year.

TI's pricing shows the relative worth of the interface and the data structure: The interface costs \$50, a data-conversion service costs approximately \$30 per page. While this price would add between 10% and 20% to the cost of producing technical documents, it may turn out to be cost-effective if it can convey the original print structure on-line and avoid custom programming.

While costly, the true advantage of Hypertrons is that it puts the structure of the original work into a database rather than into an undocumented, and perhaps subjective and incomplete, flat file. Text linked with a database gives the author systematic methods to establish and keep track of the links. Other instances of AI amplifying the intelligence in existing documents, rather than replacing it, are the conversion of the "Engineering Data Compendium" to compact disc-read-only memory by Search Technologies in Atlanta and the electronic *Oxford English Dictionary* from the Centre for the New Oxford English Dictionary at the University of Waterloo in Waterloo, Ontario.

Similar to the way Hypertrons uses existing text structures to create hypertext, I-CAT from Automated Reasoning in

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New Ford diagnostic system to debut in 1990

The days of fixing your Ford on a Saturday morning with a timing light, a wrench and a cold drink may be gone forever. Today's high-tech automobiles make it much tougher for backyard mechanics to diagnose and fix problems, a fact acknowledged by the nation's largest auto maker.

Over the next year, Ford Motor Co. expects to wrap up a four-year project — potentially worth up to \$42 million — that could eventually place sophisticated automotive diagnostic systems in as many as 1,500 large Ford dealerships nationwide. The company's Service Bay Diagnostic System (SBDS) is an IBM OS/2-based application that Ford officials say will use hypertext, directed by an underlying expert system, to replace traditional printed manuals and analog testing devices. The project is among the largest to date using those fledgling technologies.

Six limited pilot systems have just been released in Florida and Michigan, the company said. A full pilot is expected in the first quarter of 1990, and a final product release is set for the end of 1990, a year behind the original schedule.

Under development since 1986, SBDS was designed to automate shop-floor diagnostics and testing by advising, guiding and assisting company service technicians.

Systems developers say that automated diagnostics are virtually required to properly maintain today's electronically controlled engines. Conventional troubleshooting devices "don't have the ability to probe and analyze like a computer can," says Gary Kabe, director of Product Development and Services at the Carnegie Group, a Pittsburgh consultancy that is developing the expert system components of SBDS.



Ford revs up high-tech auto testing system

Developers say that the complexity of today's engines, coupled with the number of models and model years, exceeds the capabilities of existing information delivery systems.

The major components of SBDS are custom diagnostic hardware based on personal computers from Hewlett-Packard Co. in Palo Alto, Calif., the primary

contractor and project leader; an expert system from the Carnegie Group; and a hypertext interface from Owl International, Inc. in Bellevue, Wash.

With SBDS, a Ford technician can enter the vehicle model and year into the PC using a touch screen, describe the symptoms and perform the prescribed tests. SBDS may ask for more tests or indicate what parts to adjust or replace.

Hypertext provides a user interface to the underlying expert system, which will provide diagnostics and will communicate with the hypertext when it needs input or has output.

Besides its scope, the Ford project is notable because it illustrates the difficulties of integrating hypertext with expert systems. Ford officials say that on the road between the computer-aided design station and dealer's garage, its plans for both the expert system and the hypertext have shifted gears.

According to Leonard Tedesco, service systems design section supervisor in charge of SBDS development at Ford, the expert system component of SBDS has been transformed and nearly halved in size.

Emphasis has shifted from developing the hypertext user interface to translating existing repair and diagnostic manuals to hypertext. The conversion is necessary so that information contained in existing manuals can be used on the new system.

The original concept called for the expert system to create diagnostic routines instead of merely translating existing routines into code.

In the new approach, the expert system will capture the knowledge of human experts. Ford engineers will write diagnostic and troubleshooting routines — much as they would for conventional documentation, Kabe says — which will then be translated into machine code.

While Ford has not yet put a final sticker price on SBDS, it indicates that it will be priced competitively with analog diagnostic units that cost about \$28,000 each, bringing the potential total value of the SBDS project to around \$42 million if 1,500 systems are sold.

LJORA ALSCHULER and JOSEPH MAGLITTA

Roslyn, N.Y., automates diagnostics using the diagnostic portion of a technical document. I-CAT is a logic-based, as opposed to frame-based, rule-based or example-based, expert system.

A block diagram in a standard maintenance manual is an array of rectangles connected by arrows. Each box represents a circuit element, a single component or an entire system; the arrows represent the signal flow between these elements. Generally, blocks represent a higher level of abstraction than a schematic diagram.

I-CAT inputs modified functional block diagrams, or "logical block diagrams," and outputs interactive diagnostic routines. I-CAT suggests tests, analyzes feedback and pinpoints faulty parts. It can connect directly to automated test equipment and provides failure analysis for engineers. It also considers testing and replacement costs and previous failure rates when recommending repair procedures.

Both products, Hypertrans and I-CAT, use AI to capture and enhance the information in technical documentation instead of using AI to recreate it. Because of this, their vendors claim these products are more cost-effective than systems that build hypertext and diagnostics from scratch. Because of their cost, format flexibility and ability to run on standardized platforms, vendors say that these products can be more widely distributed than custom-built systems.

Symbolics, Inc. in Cambridge, Mass., sells Document Examiner, a writing tool, and Concordia, a user interface. Both were developed for internal use and later

offered as a stand-alone system for Symbolics- and LISP-compatible Macs.

Although the last two years have seen many advances in the development of hypertext, several challenges remain. First-generation hypertext products provided a user interface without a data structure. Constructing large-scale business and technical applications from these hypertexts is like building the space shuttle Columbia from the control panel of a Mercury capsule.

The next wave of hypertext products substantiate the hypertext interface with automated text-to-hypertext conversion or with other structural techniques like document databases. Developers must establish standards for hypertext exchange and a set of terms that distinguishes among different types of hypertext. And they must provide organizing tools for hypertext authors.

On a broader scale, companies and courts must continue to sort out the complicated legal issues surrounding hypertext. What are the copyright issues surrounding text-to-hypertext conversion? Do authors control the format of the converted work? Also to be assessed is the impact on hypertext of Computer-Aided Acquisition Logistics Support, the military's mandate to place all technical materials into electronic form.

Ultimately, hypertext will survive if it solves problems and does things better and cheaper than existing methods. "People shouldn't buy a product because it's hypertext," Big Science's Renick concludes. "They should buy it because it solves a business problem."

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* The Wall Street Journal (1987) — "Survey of the Information Processing Marketplace".

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COMPUTER INDUSTRY

INDUSTRY INSIGHT

Patricia Keefe

Slamming 'open' doors



Can we just slam the window shut on anything that starts with "open" or ends with "ware"? Both are particularly noxious in their repetitiveness and notable for their uselessness.

Think about it. You've got Open Systems Interconnect, Open Desktop, Openview, open systems, open computing and the Open Token and Open Software Foundations. There is vaporware, dribbleware, betaware, other ware and who cares where. Users everywhere would appreciate it if vendors would look upon their wares as fine wine: Release once before its time. Otherwise, we end up with drabs of this, drabs of that and creaky postprototypes that don't have the guts to roll out of beta.

Why sic this stuff on users? Vendors who play this game seem to be unaware that they risk sullying their reputations, irritating users and damaging potentially decent products.

Take Intel Corp.'s i486 chip. Rumors of flaws and bugs — the stuff Intel likes to call "errata" — have abounded. Intel told me recently there were

Continued on page 118

Leasing firms in Blue shadow

BY NELL MARGOLIS
CHICAGO

Aggressive competition from IBM and its captive leasing company, IBM Credit Corp. (ICC), still ranks as the leading concern among members of the computer-leasing industry, according to the findings of the Computer Dealers and Lessors of America (CDLA) industry survey, released late last month.

According to analysts at Gartner Group, Inc. in Stamford, Conn., nothing in the evolving IBM/ICC relationship or in a potpourri of IBM leasing deals brewed up for customers' delectation in recent months is calculated to cause the Big Blue threat a near-term slip in the ratings.

However, Gartner Group

noted in its analysis of the CDLA findings that IBM is already beginning to run into a wall or two in the leasing area. That, combined with a new wave of leasing-industry stability triggered by the bankruptcy of leasing player Continental Information Systems, Inc. (CIS) early this year, could be hastening an already predicted shift from a lessors' to a lessees' market over the next several years, Gartner Group said.

Discount in force
IBM discounting, a thorn in the side of lessors who find themselves unable to construct price-competitive deals and still make a profit, "appears to have become a way of life with IBM during 1989 as it strives to retain its

revenue targets." Gartner Group observed. Gross margins in the 45% to 70% range, Gartner Group said, allow it to do so. However, the firm further observed that the margins are merely wide, not infinite; constant discounting is likely to take its toll on IBM, which could have a hard time finding its way back to last prices.

The process, in fact, may already be taking place. Several analysts speculated that ever-deeper discounting was one of the factors that last month handed IBM third-quarter results that disappointed Wall Street and disconcerted smaller computer companies.

Similarly, Gartner Group noted an apparent strengthening of the IBM/ICC alliance, with a

Issues of concern

Out of the 10 top issues cited as important by leasing companies, 39% claim that they are keeping a close eye on IBM

IBM practices	39%
Captive agreements	37%
Competition	34%
Financial stability	17%
Consolidation	17%
Slowdown of mainframe growth	16%
Shortened life cycle	15%
Tax laws	14%
Funds availability	11%
Economy	8%

Base of 85; multiple responses allowed

Source: Gartner Group, Inc., Stamford, Conn.

lengthening list of bundled financial offerings and equipment exchange.

Continued on page 119

Japan gathering strength for U.S. software assault

BY AMY CORTESE
CHICAGO

Many of the basic industries in the U.S. have felt pressure from Japan and other countries. Now Japan threatens to take the lead in software engineering, long considered a U.S. stronghold, according to many computer-aided software engineering (CASE) experts.

The Japanese reportedly are chipping away at U.S. software leadership with the same tools they applied to automobiles and consumer electronics: an em-

phasis on quality, employee involvement and training — and a lot of government support.

For instance, NEC, the Japanese computer manufacturer, sponsors a software-quality conference twice a year and invites its employees to submit papers. Last year, more than 1,000 technical papers were submitted. "It demonstrates a passion for quality not seen in the U.S.," CASE consultant Ed Youdon said at an audience at the Showcase conference in St. Louis.

The Japanese, known for making the most of scarce re-

sources, have focused their attention on reusability. The average software development shop in Japan reuses 70% to 80% of its code, Youdon said. Reusability is typically worked into the budget and project schedules up front, he said, with goals set for a specific level of reusability depending on the project. On the other hand, he added, their U.S. counterparts often have a vague notion of reusability.

After years in the making, IBM's repository is due this spring, promising a common place for corporations to store and manage software development information. Meanwhile, Japanese developers are exploring a more ambitious goal of establishing a nationwide repository of software objects and

reusable code, as part of the government-sponsored SIGMA project.

The project itself is a symbol of Japan's determination to master software. It is also an illustration of how that country plans for the future. The \$200 million project was undertaken after a government study in 1985 projected that there would be a shortage of programmers.

Jerry Evans at Butler Manufacturing in Kansas City, Mo., agreed that the way to view CASE is as a way to build a better quality product. He and other attendees at the conference expressed surprise at the extent of Japan's efforts. "You hear it said all the time," Evans noted, but to have it reinforced like that was a "revelation."

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After DEC U, on to grad school

BY NELL MARGOLIS
CHIEF EDITOR

CHILMARK, Mass. — To compete in the front ranks of a computer industry that is widely predicted to become even more competitive than it is today, Dig-

ital Equipment Corp. will have to develop a sales corps with the market savvy to go up against IBM on its own grounds and the technological clout to satisfy DEC's traditional scientific and engineering customers, several analysts recently observed.

Last summer, DEC mounted a reply to these observers and others similarly inclined: DEC U.

Late last month, the company rolled out its follow-up to the summer's experimental DEC University program, which saw some 6,000 DEC salespeople en-

rolled in intensive training sessions on the campus of Brown University.

Field-force fresh

DEC U was aimed at familiarizing the field sales force of the country's second largest computer company with the increasingly complex product lines it is charged with selling to increasingly sophisticated and demand-

ing users.

And now, grad school: Digital's Institute of Technology, a series of week-long training sessions intended to bolster the technical capabilities of DEC's sales support staff. About 200 "students" a week are now matriculating at a "campus" at a retrofitted computer-aided design and manufacturing (CAD/CAM) technical facility here.

More than 300 systems, including the just-debated VAX 9000 mainframes, have been installed in the Institute of Technology lab to allow product managers and designers to conduct courses with a heavily interactive approach, said Pat Cataldo, DEC's vice-president for educational services. The CAD/CAM operation, Cataldo said, is working along uninterrupted. "The usual residents are getting a free lunch out of it," he said.

LATE LAST month, the company rolled out its follow-up to the summer's experimental DEC University program, which saw some 6,000 DEC salespeople enrolled in intensive training sessions.

What the Institute of Technology graduates are getting out of it, Cataldo said, is an unprecedented opportunity to master the technological aspects of the product lines they support, taught by the men and women who designed them. The company intends to graduate 2,000 students.

Satisfied student

Two weeks into the program, students appeared to be finding their time well spent. In anonymous written evaluations submitted to the company, an East Central area student wrote of a real-time configuration session: "I had expected only to glean an overview of Digital's capabilities in today's marketplace. The presenter far exceeded my expectations. The concepts for real-time evaluation will be extremely helpful for me in dealing with my customers in a commercial marketplace."

For teachers, too, are learning, Cataldo said. For many of them, the Institute of Technology affords their closest approach yet to actual customers and their needs.

The real final exam, of course, will be given in the marketplace. Meanwhile, Cataldo said, DEC is at work on a rollout schedule for a third track of training courses.



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FROM PAGE 115

only a few minor problems. Yet, on the eve of what is arguably Compaq Computer's most important announcement ever, Compaq was forced to reveal just the opposite.

This means that users anticipating first-quarter availability for 1486 commercial products will probably have to wait until second quarter — maybe later. Anyone eager to snag an 1486 must be pretty irked by this latest in a string of "hurry up and wait" scenarios. Of course, anyone waiting for open systems probably can stand a few product delays.

"Open" is a very subjective word. We desperately need a standard definition of what constitutes open and recognition that despite the hype, open anything does not necessarily solve compatibility problems.

Just look at the OSI model. There are seven layers, each with 20 or 30 choices. If IBM goes for all the B choices and DEC opts for A, users will still face linking problems. Many of

the "open" efforts relate back to various vendors wringing their hands over the success of crafter competitors.

How far would Unix have progressed by now if not for OSF, which slammed on the brakes at this extreme late date to insist another Unix strain as its standard. This was not done in the spirit of openness but to better meet OSF vendor needs.

AT&T was doing a pretty good job of merging the various flavors of Unix before OSF came along. Curious that while IBM and Microsoft control DOS, this doesn't seem to have produced the kind of paranoia evidenced in the creation of OSF. And how much impact has OTF had on IBM's Token-Ring market share? Not much, I bet.

It is much too early to pass judgment on the Extended Industry Architecture Standards (EISA) group, which touts its adherence to open, industry standards. Some have lauded the Gang of Nine for forcing IBM to open up its Micro Channel Architecture, even just a teeny bit. However, users planning to buy 1486 products next year now have to ponder whether to go

with EISA or MCA.

Then there are the "open" groups that spring up ostensibly to fight a fire under sluggish standard-setting bodies. The most recent is the SQL Access Group, which may very well have a legitimate agenda. But there are already two other SQL

standards bodies. Do we need three? We're going to find out.

The fact is, no matter how "open" these guys get, they still think they get an edge from their proprietary protocols. And they probably do. Everyone needs distinguishing value-add. So forget open systems. Be-

fore you open your wallet, check out the product everywhere and make sure it incorporates with what you've got. In this case of obfuscation, that's the best you can hope for.

Keefe is Computerworld's senior editor, PCs and workstation.

W. German IS industry slowing down

BY HELGA BIESSEL
COMPTON/FRANCE

MUNICH — Among the high-fliers in the West German economy, the information and communications technology branch has been the top ace. But now it seems to be coming back in for a landing.

According to the Central Association for Electronic Technology and the Electronics Industry, a West German industry committee for information and communications technology, communications equipment recorded only a 3% growth in demand compared with a 1% decline in production demand. This lack of growth is largely because

of the country's facsimile boom, in which Japan has a nearly 100% market share.

In West Germany's information and communications branches, imports climbed 26.2% to \$6.2 billion (U.S.), with \$5.2 billion from computer hardware and \$949 million from communications technology. This was accompanied by a 3% slide to \$9.7 billion in domestic production. The recession is partly due to dropping prices in West Germany and the U.S.

West Germany's computer and communications equipment growth rate of 21% to a volume of \$4.9 billion was less than the 26.2% growth rate of imports. And the number of those em-

ployed in this branch also fell 2.5% to 209,000.

According to analysts, the reasons for the decline include ailing dynamics on the part of innovators, along with an allegedly saturated market.

Gerhard Adler, president of market researchers Diebold Deutschland GmbH, said growth is declining in part because data processing branches are expected to record a 3% to 4% slower growth for the next few years.

Christian Schwarzschild, West Germany's postal minister, said telecommunications equipment and services saw a 5% growth rate, but signs of saturation in the telephone services area are evident.

Wang trims down, raises \$200M in move back to black

BY PATRICIA KEEFE
COWI

LOWELL, Mass. — Wang Laboratories, Inc. is inching slowly back to the black and shedding excess ponderage in the bargain.

Attendees at Wang Laboratories' annual meeting were told two weeks ago that the embattled minicomputer maker has successfully raised over \$200 million through actual and pending sales of nonstrategic assets.

Wang President Richard Miller told the gathering that he expects to sell additional nonstrategic assets valued at \$200 million to \$300 million within the next six to nine months.

In all, Wang has identified \$600 million in nonstrategic assets, including Intecom Corp., Wang International Financials Ltd., Wang Information Services Corp. and quite a bit of real estate, said Paul Henning, Wang's director of investor relations.

The combined proceeds from current and announced future asset sales, totaling \$400 million to \$600 million, will be used to reduce debt and related interest payments resulting from back-to-back catastrophic quarterly losses (CW, April 24 and Aug. 7).

"We have made significant progress in building a stable financial foundation to support our future operations," Miller said. "A few short months ago, there were those who would have written our corporate epitaph. Well,

I can tell you tonight that we are very much alive."

However, Miller did warn that if Wang is to maintain its independence and survive what he called an imminent industry shakeout — while also providing shareholders with an attractive return on investment — then every Wang division and employee "must embrace the principle that... every product we design, every service we offer, must end and begin with customer and as our paramount concern."

Further restructuring
Pending completion of a review of Wang's bloated cost structure, Miller put the company's thick layers of management on notice with two predictions.

"Our expenses will be reduced by over \$250 million annually and, more importantly, there will be an immediate and deliberate dismantling of the bureaucracy that devastates our bottom line, that stalls our productivity and inhibits the entrepreneurial genius which first won the confidence and trust of our customers."

Henning confirmed that "fairly soon" Wang will announce further organizational restructuring. Cuts of 2,500 are rumored.

In the last year, Wang's work force has shrunk by 5,000 positions through a combination of layoffs and attrition. It currently employs 25,000.

Following a whopping \$424.3

million loss in fiscal 1989, Wang took its first step down the road toward financial recovery in late August by reaching agreement with its banks to extend credit lines.

Shortly thereafter, Wang received \$175 million working capital from CITI Hanover Mutual Trust. That amount is expected to fund Wang's operating needs for the next 18 to 24 months.

In the meantime, Wang has reached agreements to sell \$25 million worth of nonstrategic assets, while also inking agreements in principle to sell additional assets valued at more than \$5 million. These assets included the following:

• An agreement in principle to sell the domestic equipment lease portfolio of Wang and Wang Credit Corp. to a "major financial institution" for approximately \$150 million.

• Once completed, sale of a portion of Wang's interest in a European real estate subsidiary will net Wang \$37 million.

• The completed sale of Wang's manufacturing facilities in Stirling, Scotland, to Compaq Computer Corp. for \$13 million.

• Additional miscellaneous assets have been sold for approximately \$12 million.

Miller termed the announcement "good news for everybody interested in our return to financial good health." The asset sales will not affect customer service or financing or Wang's ability to innovate, he added.

Financial restructuring continues to be Wang's first priority, and Miller said intensive efforts continue to streamline the way

the company operates.

Miller also addressed three other key concerns: customer service, sustainable profitability and employee communications.

Stardent merger complete; home base and CEO named

BY NELL MARCOLIS
COWI

NEWTON, Mass. — Ardent Computer Corp. and Stardent Computer, Inc., the graphics supercomputer architects who in August decided, "If you can't beat 'em, join 'em," last week announced that their merger and

new incarnation as Stardent Computer, Inc. went into effect on Oct. 24.

With a green light from shareholders and government regulatory agencies, Stardent ended weeks of speculation as to who will do what, and where, at the executive level.

Veteran computer industry entrepreneur and former Stardent head J. William Poduska will serve as Stardent's president and chief executive officer. Veterans computer industry entrepreneur and former Ardent head Allen H. Michaels will serve as chairman, focusing on far-reaching strategy.

"These four objectives are the cornerstone of our transition, the foundation upon which we will restore stability and growth," he said.

Stardent will be headquartered in Newton, Mass., former Stardent central site, with an approximately equivalent operation at the former Ardent home base in Sunnyside, Calif.

"There's a question but that the merger is a good deal in the near term," said Agit Kapor, an analyst at BIS CAP International, Inc. in Nor-

well, Mass. However, he said, as record prices for graphics workstations take on more

or more millions of instructions per second, triumph in the graphics supercomputer niche could end up a moot point.

Unless Stardent uses its joint clout to move beyond the market it is

clearly poised to dominate, Kapor said, "their assets could become their liabilities."

According to Robert Trier, director of technical programs at the Research Consortium Inc. in Minneapolis, plans for just such a move are already under way at Stardent.



Poduska will be Stardent's president and CEO.

Leasing

FROM PAGE 113

change possibilities. However, a Gartner Group poll of 400 major IBM users earlier this fall showed relatively few takers for ICC's more sophisticated new leasing options.

Gartner Group speculated that users are willing to forego the "flexibility" of ICC's new deals in favor of the flexibility of multivendor dealings, used equipment alternatives and the customized contracts still more prevalent among independent lessors.

ICC's share of the overall equipment financing market for the first six months of 1989, according to Gartner Group figures, grew dramatically: up 43% over last year's first half for financing to independent remarketers and end users and up 68% for direct end-user financing alone.

And the winner is...

However, Gartner Group said, "we believe that ICC has won the majority of its 1989 deals primarily on price. . . . Continuation of such competitive bids depends on parent strategy and the financial trends of ICC." IBM earmarked an unexpected customer surge to leasing as one of the prime factors behind its disappointing third-quarter earnings, a possible indicator that parent strategy is at least open to question.

NICKELS & DIMES

Systematics, Inc. reported \$53.7 million in revenue for its first quarter ended Aug. 31, an increase of 14.1% over revenue of \$47.1 million in the first quarter last year. Net income was \$4.3 million, compared with \$3.7 million in the first quarter a year ago, an increase of 16.5%.

Micron Technology, Inc. reported revenue of \$446.4 million and net income of \$106.1 million for fiscal year 1989, which ended Aug. 31. These figures compare with revenue of \$300.5 million and net income of \$96 million for fiscal year 1988. Revenue for the fourth-quarter fiscal year 1989 was \$103 million, and net income was \$16 million, down from revenue of \$113.4 million and net income of \$43.3 million for the fourth quarter of fiscal year 1988.

Alpha Microsystems reported net income for the second quarter ended Aug. 27 of \$113,000 on net sales of \$13.1 million. The organization reported a profit of \$605,000 on net sales of \$12.7 million for the like period a year ago.

"The trend towards operating leases and away from capital leases is significant," Gartner Group said. Capital leases can be booked as sales for accounting purposes; operating leases cannot. "The question remains how long IBM will be able to tolerate the concurrent decrease in its revenue."

In addition to possible curbs on the ICC incursion, Gartner

Group also pointed to last January's bankruptcy of CIS — particularly when seen in the context of the financial instability of many smaller independent lessors — as a cloud with a distinctly argentine lining. The consequent user "flight to safety," Gartner Group reasoned, will focus emphasis on the "overall lessor relationship" rather than on a single factor such as price. This

shift will in turn promote stability within the leasing community, at least in the long term.

Value-added services, estimated by Gartner Group as an approximate 8% contributor to the revenue of major lessors in 1989, are expected to show up as 30% to 35% of revenue for the same companies by 1994. "Services will include disaster recovery [and] some level of sys-

tems integration and maintenance," according to Gartner Group projections. "The more creative lessors will branch out into true portfolio management for users, including acquisition alternative strategies, asset tracking and administration and disposition or remarketing. The largest lessors and captives might entertain facilities management."

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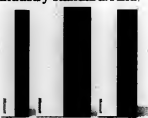
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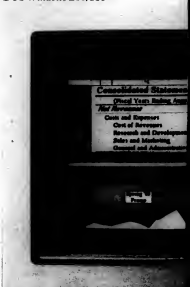
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Computer Consulting

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Contract Professional Services
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"Our ads in Computerworld had the resumes pouring in and the phones ringing,"

With more than 60,000 customers worldwide, Unisys is a \$10 billion information systems company that applies leading-edge technology to provide the best possible solutions to its customers.

So naturally, says Linda Huebscher, Manager of Employment for the company's Product & Technology Operations division in Roseville, Minnesota, Unisys wants the best technically trained personnel on its team. And for the most successful recruitment of such qualified professionals, Linda explains, Unisys turns to *Computerworld*.

"We recently embarked on two major recruitment campaigns for systems programmers. First, we need to support our development of Unix*-related products and services. Second, we seek systems programmers to help us capitalize on our lead in fourth generation language (4GL) technology.

"We want programmers who are well qualified, aggressive and systems motivated. The market for programmers with Unix kernel and shell development experience is extremely competitive. Just as it is for professionals with backgrounds in C programming, relational database and 1100 systems technology."

"And we are confident we'll find these professionals through Computerworld. I asked our key systems programmers and managers which periodicals are most widely read by our top programmers. I was told in no uncertain terms that Computerworld is at the top of their reading lists."

"That became clear when we saw the results. Our ads in Computerworld had the resumes pouring in and the phones ringing. We averaged 28 responses for each ad we ran. But most importantly, we made several very good hires."

Computerworld. We're helping serious employers and top computer professionals get together every week. Just ask Linda Huebner.

For all the facts on how *Computerworld* can put you in touch with qualified personnel, call your local *Computerworld* Recruitment Advertising Sales Representative today.

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600/343-6474 (in MA call 508/879-0700)

An IDG Communications Newspaper

It's easy to place your recruitment ad in Computerworld!

All the information you need is right here. Just call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700). Or, if you want, you can send us the form below via mail or our FAX machine. You can reach our FAX at ext. 739 or 740 at either of the above numbers.

The following information will help you determine the size ad you'd like to run and when you'd like to run it.

CLOSING DATES: To reserve space, you need to call us by 5PM (all continental U.S. time zones), 6 days prior to the Monday issue date. We need your ad materials (camera-ready mechanical or copy for pub-set ad) by 5PM, 5 days prior to the weekly issue.

AD COPY: We'll typeset your ad at no extra charge. You can give us copy via phone, U.S. mail, or FAX. To typeset an ad for you, we need clean, typewritten copy. Figure about 30 words to the column inch, not including headlines. (There are seven columns on each page.)

LOGOS AND SPECIAL ARTWORK: Any logos or special artwork should be enclosed with your ad copy. For best reproduction, please send us either a stat of your logo or a clean sample on white bond paper.

COLUMN WIDTHS AND MINIMUM DEPTHS: Your ad can be one of seven different widths. There is a minimum depth requirement for each width. You can also run larger ads in half-inch increments. The chart below can serve as a reference.

NUMBER OF COLUMNS	WIDTH	MINIMUM DEPTH
1 column	1 1/4"	2"
2 columns	2 5/8"	2"
3 columns	4 1/16"	3"
4 columns	5 9/16"	4"
5 columns	6 15/16"	5"
6 columns	8 3/8"	6"
7 columns	9 3/4"	7"

RATES: Your rate will depend on the size of your ad and whether you choose to run regional or nationally. The national rate is \$13.50 per line or \$189.00 per column inch. The regional rate (Eastern, Midwestern or Western editions) is \$9.00 per line or \$126.00 per column inch. You can run your ad in any two regions for \$11.60 per

line or \$162.40 per column inch. In all cases, you can earn volume discounts.

The minimum ad size is two column inches (1 1/4" wide by 2" deep) and costs \$378.00 if run nationally. A sample of this size appears below. You can run larger ads in half-inch increments at \$94.50 per half inch. Box numbers are available and cost \$25 per insertion (\$50 if foreign).

Programmer Analyst

This is a sample ad for Computerworld's Computer Careers section. It will help you decide what size ad you'd like to run. Remember that you can run your ad either regionally or nationally or in our recruitment section and that the minimum ad size is one column (1 1/4" wide) with 10 lines deep (the sample). The ad would cost \$378.00 if run nationally, \$252.00 in the Eastern, Midwestern, or Western edition, and \$204.00 in two regions, volume discounts apply.

SAMPLE AD SIZES AND PRICES: To assist you in planning your recruitment advertising, the following shows common ad sizes and their respective costs.

	One Region (East, Midwest or West)	Two Regions (East/West Midwest/West)	National Edition
1 column x 2"	\$ 252.00	\$ 324.80	\$ 378.00
2 columns x 2"	\$ 504.00	\$ 649.60	\$ 756.00
3 columns x 3"	\$1,134.00	\$1,461.60	\$1,701.00
4 columns x 3"	\$2,520.00	\$3,548.80	\$3,780.00
5 columns x 3"	\$4,410.00	\$5,564.00	\$6,615.00

PAYMENT: If you're a first-time advertiser or if you haven't established an account with us, we need your payment in advance (or with your ad) or a purchase order number. Once you have established an account with us, we'll bill you for any ads you run as long as your payment record is good.

COMPUTER CAREERS NETWORK BUYS: You can take advantage of special rates that let you run your ad in *Computerworld* and *Computerworld's* sister newspapers at special rates. Choose from *Computerworld Focus* on Integration, *Network World*, *InfoWorld*, *Digital News* and *Federal Computer Week*. Call for details.

Computerworld Recruitment Advertising Order Form

Ad Size: _____ columns wide by _____ inches deep

Issue Date(s): _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Region: ☐ East ☐ Midwest ☐ West ☐ National ☐
☐ East/Midwest ☐ Midwest/West ☐ East/West

Send this form to: **COMPUTERWORLD RECRUITMENT ADVERTISING**
 375 Cochran Road, Box 9171, Framingham, MA 01701-9171
 800-343-6474 (In MA, 508-879-0700)
 Telecopier Extension: 739

"Even compared to leading dailies, Computerworld generally draws a bigger and better pool of candidates."

Edward J. Wisniewski
Vice President
Manager of Staffing Programs
BankAmerica Systems Engineering
Bank of America

It's no wonder Edward Wisniewski's colleagues call him "mainframe." He's Vice President/Manager of Staffing Programs for BankAmerica Systems Engineering (BASE), the information systems division of the \$100 billion Bank of America. Overseeing staffing for systems, from PCs to minis to mainframes — he's a man with a big job.

"Centralized in Concord, California, BASE is responsible for systems and software development, contract negotiations, procurement, and computer-related equipment expenditures in support of the bank's business systems worldwide. Our division alone employs 4,500, so building and maintaining a top-notch staff is no small task. We recruit as many as 600 professionals every year, and we get lots of help from Computerworld.

"We have our own training program for filling entry-level positions, but generally we need to find systems programmers, applications programmers, systems analysts, and LANs programmers in the mid and upper ranges, with five



to ten years of experience in specific disciplines. That's why Computerworld's audience of qualified computer professionals is perfect for us.

"Unlike other trade publications we've looked at or even advertised in, Computerworld delivers the type and caliber of professionals we need. Even compared to leading dailies, Computerworld generally draws a bigger and better pool of candidates. And that's important to us because we're generally looking to hire immediately.

"Success. In one word, that's why we're running a lot more recruitment advertising in Computerworld this year than last."

Computerworld. We're helping serious employers and qualified information systems, communications, and PC professionals get together in the computer community. Every week. Just ask Edward Wisniewski. For all the facts on how Computerworld can put you in touch with qualified personnel, call John Corrigan, Recruitment Advertising Director at 800/343-6474 (in MA, 508/879-0700).



COMPUTERWORLD

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New York: Paramus Plaza 1, 140 Route 17 North, Paramus, NJ 07652 (201) 967-1350
Washington D.C.: 8504 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115
Chicago: 10400 West Higgins Road, Suite 300, Rosemont, IL 60018 (312) 827-4433
Los Angeles: 18008 Sky Park Circle, Suite 145, Irvine, CA 92714 (714) 250-0164
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Be a vital member of our team in Houston—where the spirit of optimism is driving a comeback economy. You'll enjoy a highly affordable cost of living in a vibrant, cosmopolitan city. Our benefits include medical/dental insurance, flex account, tuition reimbursement, 401K and education assistance. Send your resume to:

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Quality Assurance Analyst. Provide technical support to the Quality Assurance team. Analyze and test software products to ensure they meet the required quality standards. Identify and report defects and provide recommendations for improvement. Collaborate with development teams to resolve issues and ensure high-quality software releases.

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Systems Engineer. Analyze and design computer systems to meet the needs of our clients. We are seeking a highly motivated and experienced Systems Engineer to join our team. This position has opportunities for growth and advancement. We offer a competitive salary and benefits package. If you are interested, please send your resume to:

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Our current clients are currently seeking experienced IBM professionals for various projects. We are seeking a highly motivated and experienced IBM professional to join our team. This position has opportunities for growth and advancement. We offer a competitive salary and benefits package. If you are interested, please send your resume to:

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In Dallas, Texas, we are renowned for lifestyle advantages which include a warm climate, abundant recreational facilities, affordable housing and a moderate cost of living. At AMRIS Travel Services Division, an affiliate of American Airlines, we're dedicated to the development of innovative computer information systems aimed at revolutionizing the non-airline reservation network for the hotel and car rental industry. For professionals with expertise in one or more of the following areas, we offer outstanding career opportunities for you to make your mark in time.

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MARKETPLACE

Falling prey to a paper tiger

Toothless "shrink-wrap" licenses leave software vendors in a legal lurch

BY RAYMOND T. NIMMER
SPECIAL TO CIO

Are mass-market software licenses worth the paper on which they are printed? Well, that depends on how much the paper costs.

Mass-market or shrink-wrap licenses are peculiar to the software industry and, within it, to that segment in which vendors sell their products by mail-order, over-the-counter or by other means designed to reach the mass market. In such cases, neither the purchaser nor the seller negotiates terms; the purchaser merely buys the product at the going rate.

For years, lawyers have advised software vendors to include these licenses with their products, knowing that their legal effect is questionable. These license agreements are probably unenforceable; simply put, they are not negotiated agreements but efforts by one side to impose terms on the other.

To my knowledge, there has not been one judicial decision that relied on a shrink-wrap li-

cense to give rights to a producer or take them from a user. The simple fact is that no software developer can rely on these papers in a major lawsuit, and if one ever did, his chances of success would not be great.

Two states, Illinois and Louisiana, enacted special laws validating shrink-wrap agreements. The Illinois law was repealed. Then, a federal court ruled that the Louisiana law was at least in part invalidated by federal copyright and patent law. The court assumed with very little discussion that a shrink-wrap license would be invalid as a contract. Most courts would agree with this decision.

You cannot have a contract without an agreement. You cannot have an agreement forced on you without even knowing its terms. This oversimplifies the matter, and many lawyers can come up with sophisticated rebuttals, but these principles describe the essential flaw in the effectiveness of many shrink-wrap licenses.

The license usually is not described to the buyer before he

purchases the package. Therefore, no one could say he agreed to the license at that time.

Later, when opening the package, the buyer already owns the copy of the program. But simply stating in a piece of paper that by using the product the buyer agrees to the terms of the license is a hunk of law — unless such an agreement was made before or during the time of purchase.

What is the purpose?

Why do we have shrink-wrap agreements? What is their intended purpose?

The licenses routinely limit the warranty that the manufacturer makes regarding the software and the risk of liability it assumes if the program malfunctions.

Disclaimers and liability limitations have a long history in contract law and can work if they are conspicuous and become part of the actual bargain. Some shrink-wrap agreements may meet this description, but many cannot.

In some states, however, even if agreements were to meet these conditions, the mass-market disclaimers would still be ineffectual under consumer protection statutes.

In any case, the producer and

the seller cannot revoke warranties assuring that they sold you a merchantable product — one of ordinary quality — after the sale is completed.

The shrink-wrap agreements routinely limit the number of copies of the software the user can make. Here we have use of a pseudo-contract. While the license may not be effective, however, you cannot legally copy the software to your heart's content. Virtually all mass-market software is protected by federal copyright law that limits your right to copy.

Software secrets

Some licenses limit your right to reverse-compile or reverse-engineer the software and disclose or use the "secrets" you discover in doing so.

Even if we assume that there are secrets, a producer can get a contract from a buyer barring disclosure of secrets. But can it impose one? Most likely not. The U.S. Supreme Court said last year that the ability of a buyer to discover secrets from mass-market products is central to this country's system of intellectual property law.

So far, shrink-wrap agreements have been described from the perspective of the user. What about the producers? Should they use these agreements? The answer is often yes.

The licenses may not change or add to copyright restrictions, but they alert the buyer to copy-

right limits. Although they often will not alter warranties that declare software as merchantable, they create an argument that a buyer waived his rights by not objecting to the license. While they probably cannot eliminate the buyer's right to reverse-engineer the program, the license — coupled with some protections in the product — enables the producer to argue that its own employees are doing wrong if they steal secrets.

There we have it — an *Alice in Wonderland* approach to computer law. The licenses probably do not work, but the producer is better off with them than without them.

Nimmer is Foundation Professor of Law at the University of Illinois, consultant to the law firm Sheffelin, Moley & Kay and author of *The Law of Computer Technology* (Warren, Gorham & Lamont, New York).



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XT Model 089	\$1,025	\$1,400	\$950
AT Model 099	\$1,500	\$1,775	\$1,500
AT Model 239	\$1,700	\$2,100	\$1,700
AT Model 339	\$1,825	\$2,000	\$1,700
PS/2 Model 50	\$1,525	\$2,000	\$1,500
PS/2 Model 60	\$2,700	\$3,300	\$2,500
Compaq Portable II	\$975	\$1,225	\$825
Portable III	\$1,250	\$1,700	\$1,350
Portable IV	\$2,075	\$2,975	\$2,300
PS/2 Model 50	\$1,600	\$2,200	\$1,400
PS/2 Model 60	\$2,700	\$3,300	\$2,500
Apple Macintosh 512	\$550	\$650	\$300
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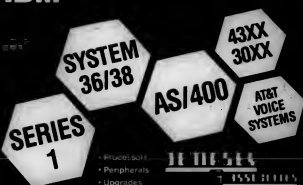
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TRAINING

To build or not to build?

Development costs weigh heavily when deciding to make or buy courses

BY BILL SERNELL
SPECIAL ADVERTISING

Many training managers still, more importantly, many training managers' bosses, erroneously believe that it is usually more economical to develop technical training courses than to buy them from a vendor. The only time they will use a vendor is when they back themselves into a corner, or send students one-at-a-time to public offerings.

There appear to be several reasons for this attitude. One is the mistaken belief that training is easy and that anyone can build and deliver a course. The managers look at the rates that vendors charge and are convinced that in-house costs must be lower. Most important, they do not know what their own training development costs really are, so they have nothing to compare with the market prices.

In-house training and development costs are considerable. If a developer knows the technology, understands instructional

design and has been trained in delivery techniques — all of which come at a significant cost — the average development requirements for delivery media are the following:

- Thirteen days for each day of classroom lecture.
- Four hundred hours for each hour of computer-based training instruction.

• Eight hundred hours for each hour of interactive video instruction.

• Twenty-six hours for each hour of tele-training.

If we assume that an average instructor costs \$40,000 for salary and benefits and works 220 days a year, each man-day of development costs \$181. The simplest training — a five-day lecture class — will cost the corporation \$11,765 (13 times five days multiplied by \$181). This ignores the costs of getting an instructor to the proper level of knowledge and experience.

There are some additional problems. The development cost

is strictly overhead — the instructor will not be teaching while developing. There may be little more than faith to go on regarding the quality or results of the effort until the course is delivered. The elapsed time is a full quarter of a year, assuming no delays or interruptions. The organization is dependent on the individual who develops the course unless or until some backup can be provided.

Taking all these issues into account, it is not surprising that estimates of the true costs of developing complex courses frequently run into the hundreds of thousands of dollars. With numbers of this kind, it makes economic sense to consider buying a course from a reputable vendor.

Developing a course in-house is also an expensive proposition. Many people feel that instructors bring to their job just four basic qualities — a show business ego, presentation skills, communication skills and subject

matter expertise. They also assume that these attributes are all that one needs to ensure quality training. While these factors are certainly important, several others are also crucial, including preparation for classes, teaching skills, instructional design, student evaluation and student counseling.

All of these skills require constant honing and maintenance. Keeping abreast of the ever-changing subject matter and learning new technical material for the future are other areas to address. With experience indicating that instructors cannot be kept in the classroom more than about 110 days a year without a drop in performance, it is advisable to let them work on these issues. The problem is that doing so costs money.

When does it make sense to develop and deliver courses in-house? If a technology has been used in an organization for a significant time, it is worthwhile to consider in-house development and delivery of courses in that area. The reasons are fairly straightforward: There should be plenty of individuals with expertise. There is probably a wealth of well-structured material in books, manuals or existing courses that can be leveraged quickly, easily and cheaply. The

course requirements should be well known. The need for formal documentation and maintenance will be relatively modest. The number of students to be trained will likely be relatively small, and there should be plenty of follow-on resources if students need to ask questions.

Assuming that a company has people on staff with the right knowledge and experience, training that is heavily oriented to a company's individual procedures or practices is another excellent field for in-house development. It will cost a vendor as much as the user to develop a customized course. There is little likelihood that the vendor can recoup its costs and earn a profit by delivering the course to other clients. There is no incentive for a vendor to offer discounts to develop this kind of training, so it is unlikely that a company will find the bargains available with courses on generic topics.

Additionally, a basic philosophy of buying the best training available and building the remainder internally makes sense: It helps ensure that quality training will be delivered.

Sernell is a vice-president at Data Base Management, Inc., a subsidiary of American Management Systems, Inc. in Manchester, Conn.



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Henson back in business — at Legent

BY NELL MARGOLIS
OF STAFF

VIENNA, Va. — Joe M. Henson, who surprised the industry this time last year when he resigned from the chief executive officer's post at Prime Computer, Inc., joined the CEO mantle once more last week — this time at Legent Corp.

Henson began his tenure immediately after the announcement late last Thursday. He was also named chairman of the systems software firm created by the March 1989 merger of Duquesne Systems, Inc. and Motorola Associates.

As an outside director of Legent, Henson took a strong role in the postmerger integration of the two companies with common customers but disparate product lines and corporate cultures (CW, Oct. 30).

Former Legent Chairman Mario Morino and former Legent CEO Glen Chaffield will remain actively involved in the company, they told Computerworld last week. In addition to serving on the board's executive committee, Chaffield will direct

its finance and audit committee. Morino will head the finance committee and will also serve as director of Legent's merger and acquisitions program, which was targeted from Legent's inception as key to its growth.

Morino said last week that Henson's role as the driving force behind the merger was

Prime's later 1987 acquisition of Computervision Corp., as well as the subsequent purchase of General Electric Co.'s Calma division were significant factors recommending him to Legent.

While regarded as a bold move at the time, Prime's difficulty in assimilating Computervision was a frequent

clashed major cause of the slowed growth that, according to many analysts, kept the company from reaching its \$2 billion goal, contributed to Henson's departure and ended in Prime being sold to private ownership.

The Henson administration saw Prime grow from a \$350 million entrepreneurial company into a \$1.7 billion player. Legent, too, has charted a high-growth course according to its principals. In a rapidly consoli-

dating industry, Henson said, Legent has a strong chance to move to the forefront.

While siding in the integration of Morino and Duquesne, "I became increasingly excited about software and its future," said Henson, 56, whose roots — 27 years at IBM and seven at IBM's hardware division — "Maybe, in all honesty, I had become increasingly disenchanted with playing golf five days a week."

Legent's changing of the guard came as a total surprise to most analysts. "The company has positioned this as a natural evolution, and in a way, you can see where they're going," said one analyst who requested anonymity.

He added that he expected Morino's and Chaffield's diminished roles to disturb some of his peers, however.

"I think [the executive switch] will raise a question of what's going on at Legent," said Robert Kanter, an analyst at Legg Mason Martin, Inc. "I'm surprised that the stock hasn't budged."

Kanter added, however, that he has no indication that anything is amiss at Legent. "Their growth rate is terrific, their earnings, their strategy. You keep asking, can a merger of equals really work? So far, it looks like it can."

Circuit switching made simpler for SNA nets

BY ELISABETH HORWITT
OF STAFF

WHITE PLAINS, N.Y. — IBM announced a new version of its Systems Network Architecture (SNA) VTAM software last week with enhancements designed to improve the communications system's ability to handle "casual" circuit-switched connections.

ACF/VTAM Version 3 Release 3, with availability dates ranging from December through mid-1990, includes enhancements said to allow VTAM hosts to communicate directly with one another over multiple channel-based and circuit-switched connections. The MVS/ESA version can also improve performance up to 50% on a very large SNA network, IBM said.

While comparable features had been available on IBM's 3725 and 3745 communications processors via the latest release of IBM's Network Control Program (NCP), the VTAM release provides the capabilities without a front-end processor.

This is critical to users of 4300 and 9370 systems, whose built-in communications processors do not run NCP, according to David Fumason, a partner at Ernst & Young subsidiary Network Strategies, Inc.

Among the enhancements available on the new VTAM re-

lease are the following:

- The ability for a host to support up to 16 transmission groups (channel-based links) to an adjacent system (host or front-end processor).

- This enables users to build parallel channel-to-channel connections that can support T1 speeds of 1.5M bit/sec, or even T3 speeds of 45M bit/sec, Fumason said.

- Multiple channel connections between a 3090 host and a 3745 can effectively double the front-end processor's throughput, an IBM spokesman said.

- NCP Version 5 Release 3, with enhanced Token-Ring support, including multiple polling of workstations on the local-area network from a 3174 and enhanced backup capability through the use of dual Token-Ring couplers, availability is scheduled for December.

- Support of IBM's Type 2.1 (formerly called PUF2.1) on VTAM, which enables hosts to act as T2.1 nodes directly rather than through their front-end processors.

- The ability for VTAM hosts to talk to other VTAM hosts, or to adjacent NCP nodes, via "casual" or circuit-switched connections through their front-end processors. This eliminates the need to go through the complex setup routines typically required for circuit-switched host connections.

CIM

FROM PAGE 1

James C. Weinberg, partner in charge of manufacturing industry. By comparison, he said, experienced and successful CIM users tend to see it — and its associated technologies — as a subset of the corporation's overall business strategy.

The emphasis on the shop floor is underscored by which position in the company is responsible for CIM implementation. Nearly half the companies sur-

veyed rely on manufacturing executives to fill that role, according to KPMG, which said only chief executives "have the span of management control required to integrate CIM across functions and across companies."

The perceived founding of U.S. manufacturers, observers said, is the result of an over-reliance on technology as a substitute for old-fashioned strategic planning. While some warned that U.S. manufacturing continues to lag behind its Japanese and European counterparts — in how quickly and how effectively it puts information technology to work — others saw reason for optimism.

"The manufacturing environment as a way to control their company's destiny and keep IS in the back room," said Roger Willis, a partner at Andersen Consulting. During the next decade, however, manufacturing will replace CIM as a way to "integrate people, vendors and customers, not just Computer A with Computer B," he added. This will, in turn, bring on the realization that "IS has a valuable role to play as experts in information technology," Willis said.

Some companies have already reached this conclusion. Ferno Washington, Inc., a Wilmington, Ohio, manufacturer of ambulance cots and stretchers,

is implementing a work-measurement system that would bring shop-floor control systems under the coordination of Manufacturing Accounting and Production Information Control System, or MAPICS. IBM's combination of manufacturing resource planning, production control, accounting, marketing and scheduling system.

The project has encountered resistance but is being pushed through by a close cooperation between IS and engineering departments, according to George M. Resner, Ferno Washington's

director of engineering.

Those barriers pose one of the biggest obstacles to CIM implementation, according to Halse. "Plant people do not like to be told from on high how to architect their systems, while IS often feels victimized by users' requests for variety and uniqueness" in shop floor systems.

Allen H. Michaels, chairman of Systems Concepts, Inc. in Newton, Mass., said he was "pro-

fusely confused and disoriented at the deadly slowness of the adoption of new design methods" by U.S. companies. Michaels said Japanese companies — which accounted for 40% of the high-end workstation sales of the recently merged Ardent Computer Corp. and Stellar Computer, Inc. — "were no expense" when giving their design departments the best available workstation technology.

Integration means war at Autofact

The CIM wars escalated at last week's Autofact conference, with major consulting, software and computing firms introducing tools designed to help minimize the expense of integrating multi-vendor systems across various manufacturing areas.

Major vendors introduced their respective CIM platforms, along with tools and alliances designed to help minimize the expense of integrating multi-vendor systems across various manufacturing offerings.

Digital Equipment Corp. announced an agreement to market its Ultra-based workstation cooperatively with

Systems Strategies, Inc.'s Esbridge/Ultra, software said to provide links between Ultra systems and IBM hosts. A future LVA-2-based connection is likely, a spokeswoman said.

IBM and Unisys Corp. announced agreements to integrate their CIM systems with Interlan Corp.'s Factory Floor systems of software, which is said to provide factory information management based on SQL database technology.

Meanwhile, major consulting firms demonstrated tools designed to complement their CIM expertise in making users' inte-

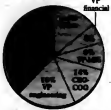
gration projects go smoothly.

Andersen Consulting is expanding its closed-loop manufacturing resource planning system, Mac-Pac, to include "cell-to-cell integration" tools for tying in other manufacturing areas, said Roger Willis, director of CIM at Andersen Consulting. The firm has linked Mac-Pac to McDonough & Dodge Corp.'s financial management system, as well as to a prominent systems internally developed by an aerospace company. Links to the shop floor are made through Andersen's Cell-Pac.

ELISABETH HORWITT

Responsible party
CIM project teams most commonly report to manufacturing executives, according to a survey of 1,500 people in manufacturing companies

PERCENT OF RESPONDENTS
PAGE OF 1,500



Source: Survey of 1,500 people in manufacturing companies

AT&T may relax grip on Unix

BY AMY CORTES
CW STAFF

NEW YORK — Glaxo may have come to Unix.

Robert Kaver, president of AT&T's Data Systems Group, said last week that he is considering selling off equity interests in Unix Software Operation (USO), AT&T's software arm, particularly to members of Unix International and the Open Software Foundation (OSF).

"I believe for some OSF members, this is an attractive element," Kaver noted.

The disclosure came as AT&T and its Unix International affiliate of partners gathered at the Unix Expo to officially announce AT&T Unix System V, Release 4.

Putting the feeders out

Kaver said AT&T was in conversation with a number of OSF companies, to see "if we can have one implementation or a strong coalition." Although he said he did not know where these conversations would lead, he hinted that equity interest in USO might be one outcome.

OSF members seemed encouraged by the proposition. Even Ken Olsen, Digital Equipment Corp. president and founding member of OSF, was in a benevolent mood, telling reporters that if USO is spun off, there will "hopefully" be no reason for the two groups to be separate.

"We love AT&T. It's not AT&T; it's because (Unix) is controlled by a vendor," Olsen said.

"If AT&T wants to spin off USO, certainly that's an opportunity for the industry as a whole," said David Tury, OSF president.

Although OSF, a nonprofit organization, would not have the wherewithal to take AT&T up



BY AMY CORTES

AT&T's Kaver may sell off equity interests in Unix Software Operation

on such an offer, "member companies might," Tury said.

Indeed, many of the issues that led to the OSF alliance seem to have been resolved already.

Unity to mind

One of the primary reasons OSF was created was to help bring unification in the Unix industry, according to Tury. "We would look with great opportunity" on anything that might help achieve this goal," he said.

OSF plans to leapfrog the newly released AT&T Unix System V, Release 4 with a Unix implementation of its own that in-

cludes advanced functionality, such as multiprocessing and enhanced security. Tury characterized the planned OSF/1 as a new-generation architecture, beyond what is provided by USO. OSF is meeting this week to review development plans, but current estimates put availability of OSF/1 around the end of the summer.

In the meantime, products based on the new release of AT&T Unix System V will start hitting the streets early next year, as computer and software vendors complete work on porting to the new release.

With Release 4, application binary interfaces have been developed for major architectures from Intel Corp., Motorola, Inc. and Sun Microsystems, Inc. platforms, as well as the AT&T 3B platform, which allows for shrink-wrapped software applications.

AT&T Unix System V, Release 4 merges elements of the major versions of Unix—Xenix, University of California at Berkeley's Unix and AT&T Unix System V. Applications written for any of those versions will be upwardly compatible, according to officials. Release 4 is also compliant with X/Open Consortium Ltd. standards.

According to Unix International, 172 companies plan to support the new release.

Users come looking for answers at Unix Expo

BY AMY CORTES
CW STAFF

NEW YORK — This year, not only is it OK to say the U-word, but some corporate IS managers are finding it may be risky not to. Last week's Unix Expo drew many first-time attendees who came to see if Unix can deliver on the promise of open systems.

Michael Farrell, a project manager at Citicorp's Information Management Services, Inc. (IMS), said he came to find out "What does Unix really buy us that we don't already have?"

So far, though, Farrell said he has not been persuaded to invest in it. Despite claims of portability, "applications are not portable across Unix operating systems today," Farrell maintained.

Fitting in

IMS, a Citicorp start-up group, has the advantage of building its systems from scratch. "They will have to be multivendor," Farrell said. "We want to make sure everything will fit in."

Another Unix newcomer was Gary Lehr, a staff specialist in Du Pont Co.'s information systems department and member of a corporate open systems task force. Du Pont is not currently a large user of Unix, but "we want to get away from proprietary; open systems is the only way to go," Lehr explained.

However, Lehr said software applications for Unix were lacking. "It's coming along, but it's

not yet like the PC-DOS world," he said.

Several companies attempted to week that perception last week with the following introductions:

• Unix Corp.'s Accell/Net software for distributing applica-



tions written with Accell/SQL across a network. Accell/Net is available immediately at prices ranging from \$4,500 to \$10,000. Additionally, the firm announced an Accell/SQL interface to allow current Accell/SQL applications to run on Open Look on X Window System workstations.

• SAS Institute, Inc.'s first Unix version of the SAS System software. The software, slated to be available in the second quarter of 1990, will run on Digital Equipment Corp. reduced instruction set computing workstations running Ultrix and will use Decwindows.

• WordPerfect Corp.'s new version of its word processing software for Unix systems, which will handle graphics as well as text.

• NCR Corp.'s announcement of Tower Network, a licensed version of its Tower Network software for Unix systems. Oracle Corp. claimed that it will have a beta-test version of its SQLnet for Oracle Version 6 on the market for use with Tower Network in January.

X/Open to adopt SAA interface as standard

BY AMY CORTES
CW STAFF

NEW YORK — In a surprising move designed to interconnect the open systems world with the large base of IBM systems, standards group X/Open Consortium Ltd. announced last week that it has licensed IBM's Common Programming Interface for Communications (CPI) and will adopt it into its standards specifications.

The CPI is part of IBM's Systems Application Architecture and defines communications services for Advanced Program-to-Program Communications, known as LUG 2.

The decision to license the IBM interface was based on feedback from users at a meeting held by X/Open in Montreal last spring.

"A lot of users told us they

want to go to open systems but don't know how to get from here to there," said Michael Lambert, X/Open's chief technical officer. "A key requirement is to be able to retrieve information from an enterprise-wide database from an open systems environment."

Peer-to-peer pressure

For instance, a server on a mainframe could communicate with an application in an open systems environment on a peer-to-peer level.

Under terms of the agreement, users and developers are now free to use the interface without requiring a license or any type of negotiations with IBM.

An IBM spokesman said it was a reasonable assumption that IBM will most likely implement the interface in its AIX systems.

NEW YORK — Informix Software, Inc. last week announced that it has replaced its Informix Turbo database engine with a fault-tolerant version for large on-line transaction processing (OLTP) applications.

According to the company, the software, called Informix-Online, will perform tasks three to five times faster, replace its predecessor and offer the fault-tolerant ability to automatically replicate transactions on two disks.

Along with Online, the company announced Informix-Star, distributed database software that will permit users to access and manipulate data from Informix databases on multiple remote servers.

Informix-Star supports both Transmission Control Protocol/Internet Protocol and StarGroup communications protocols com-

monly found in Unix and contains a cost-based optimizer that examines SQL queries throughout the system to find the most efficient method of moving information from machine to machine.

In addition, Online will hold files of up to 2G bytes without sacrificing OLTP performance or the integrity of the database, according to Jeff Bork, Informix vice-president of marketing.

Integrity problems

Other methodologies use pointers within the database to files outside of the database, which can cause integrity problems and disqualify their use for large applications such as image processing.

"In imaging applications, if you lose the pointers, you have basically lost the image as well as the integrity of the database," said Michael Gould, director of image management at BIS CAP International, a consultancy in Norwell, Mass.

Jerry McLaughlin, assistant

vice-president and MIS director at Clark Burtis, Inc. in Dallas, currently uses Informix Turbo on a Sequent Computer Systems, Inc. processor. With Informix Online, he said, he will attach an erasable optical drive to the Sequent computer and store erasable transactions in the large data files for a critical application.

McLaughlin said he anticipates no 80% performance improvement. "We can now do archiving on-line and cross-query on multiple devices," he said.

Online and Star will be available by the end of the year on Unix-based AT&T 3B, Hewlett-Packard Co. HP 9000 300 and 800 series, Sequent and Sun Microsystems, Inc. computers and will be ported to other Unix platforms in the first quarter of 1990, the company said.

Turbo users under maintenance will receive a no-cost upgrade to Online. Prices are based on machine class and within each class on the number of users. On-line development systems range in price from about \$3,000 to \$90,000, the company said.

TRENDS

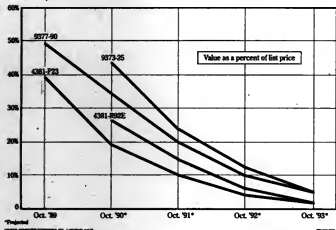


The rumors of a replacement system for both the 4381 and 9370 machines have Second Computer Economics, Inc.'s resident value projections to decline sharply.

Most users of the 4381 family machines are ready for IBM to announce a replacement for the series. Until that time, users will simply add more memory and storage to their existing configurations. Sales for the 9370 series continue at their usual modest pace.

	4381-P14	\$483	\$145	\$49.9	\$14	-	-
4381-P22	\$583.5	\$89	\$194.4	\$59.7	\$28.9	\$8.4	
4381-P90E	\$398.1	-	\$60.5	\$28.7	\$11.5		
4381-P90E	\$549.6	-	\$283.2	\$144.3	\$88.4	\$28.5	
9373-25	\$34	-	\$14.6	\$8.2	\$4.2	\$1.8	
9373-35	\$74.3	-	\$39.9	\$17.3	\$8.9	\$4.1	
9377-90	\$232.7	\$115	\$78.6	\$45.4	\$24.2	\$11.9	

When IBM does announce its new series, the "9500" family — which should be out by this time next year — prices for both the 4381 and 9370 will take a considerable plunge.



NEXT WEEK

If information systems personnel are frustrated, there's good reason. The layering-on of technology in American business — particularly in the office — has not increased productivity at all. So says MIT's Lester Thurow in an exclusive *Computerworld* interview in Manager's Journal.



The chasm between IS and end users is wide and deep. Proliferation of desktop computers has punctuated this division, and attempts to bridge the gap have largely failed. But, there is light at the end of this tunnel, and new avenues of managing end-user computing seem to be working. See the Special Report on end-user computing.

INSIDE LINES

IBM debates 'Tastes great!' 'Less filling'

The concept of a scaled-down OS/2 Presentation Manager running under DOS has the PC industry in a tizzy, and there's even evidence that factions within IBM are warring over PM Lite. Sources say the DOS camp has entertained presentations in the last week by several companies, including Netherlands-based Cyco and Rational Technologies, the DOS Extender people owned by Lotus. Rational and Cyco reportedly have pieces of the technology required to build a "light" PM. These IBMers are said to be making a midsummer introduction. A user who said he has been briefed expects an announcement one way or the other within a few weeks. The OS/2 adherents within IBM are said to favor a scaled-down version of OS/2, with perhaps 250 application programming interfaces, instead of 700.

Perils of international business

Russell Hoffman, head of P11 Enterprises, a small PC software company in Bridgeport, Conn., has received dozens of letters from Iran — many of them with almost identical wording — inquiring about the P11 tutorial authoring software. Hoffman has been sending out demo disks, but he is beginning to suspect that the letter-writing campaign is some form of harassment, since the Iranians are not actually buying the package. Hoffman is worried about offending the writers, especially in light of Iran's new law, which allows Iranians to hunt down Americans anywhere in the world and put them on trial.

The two enigmas

We hear Apple is busy ripping apart Amigas these days and actually employs a number of original Amiga developers. It seems that Apple is particularly interested in Amiga's "Bitter," a coprocessor used to process graphics, video and animation, just the thing for multimedia applications. Apple is allegedly developing a series of coprocessors, which will be used in part to provide multitasking — all of which brings us to our second enigma: that Apple is pursuing Motorola for either custom versions or specific enhancements to the 68040 and 68000 chips, thus delaying both.

Could you jump start my tank, please?

Prime was appalled to discover that its attention-gutter at last week's Autotech show — a full-sized tank designed by the vendor's Cadillac software — was dead on arrival because someone forgot to turn off the computer systems while the thing was trundling its way to Detroit. Prime's solution? It called AAA, of course, which reportedly was able to jump start the vehicle (that is, recharge the dead battery) in a trice.

Mach gaining speed

Although the Open Source Foundation claims it has yet to determine whether technology from the Mach operating system will supplement AIX as the base for OSF/1, the decision seems to be a done deal. Even an IBM representative, addressing a gathering at IBM's booth at Unix Expo, claimed that AIX was chosen by OSF as "one of the technologies" that would make up OSF/1.

Setting off Sparks

Sun's Sparc RISC-based architecture will get a boost at Comdex/89 when Tatum introduces a workstation based on the design. Sources at the Taiwanese company say the new model will be capable of providing 15 MIPS of processing power for around \$7,000. Despite a steadily growing list of supporters, only Sun and Solbourne have yet to ship Sparc-based machines.

Technetix in Washington, D.C., is having some trouble attracting enough high-tech vendors to fill up the showroom and office space designed to attract federal buyers. So, the developers have turned to seeking real estate firms, law firms, federal agencies and exporters all with a checkbook. But Technetix would have one ingredient for success in Washington: a second-proof auditorium designed to accommodate top-secret classified meetings. If your vendor opts for that approach, the hot line remains open here, with News Editor Pete Barville standing by at 800-343-6474 to split the beans.

COMPUTERWORLD

SECTION TWO
OF COMPUTERWORLD
NOVEMBER 6, 1989

*focus
on*

Integration

LINKING INFORMATION TECHNOLOGY AND BUSINESS STRATEGY

•Cover story:
Four experts
tackle
a merger
dilemma

•Trusting
outsiders
with your
strategic
projects

•Unisys: Hot
on its own
integration
trail

•Vons'
supermarket
of the future

•Curing
hospitals'
information
ills





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COVER STORY

THE CASE OF THE DUAL DATA CENTERS

What would you do if your CEO gave you an information systems directive that you didn't think was in the best interest of your company? Four IS experts make sense out of this integration predicament. *By Paul Gillin. Page 12.*

FEATURES

TRUSTING OUTSIDERS WITH STRATEGIC PROJECTS

Citing loss of control and unproven ability, IS managers remain wary of awarding crucial projects to systems integrators. *By Julia King. Page 18.*

INTEGRATION IN PROGRESS AT UNISYS

Unisys seeks a return to profitability through niche marketing and closer customer ties. *By Helen Pike. Page 26.*

CHECK OUT THIS SUPERMARKET

The Vons supermarket chain has distinguished itself from rivals by making technical innovation part of the way it does business. *By Helen Pike. Page 30.*

A SYSTEMS REMEDY FOR HOSPITAL COSTS

Hospitals are not immune to labor shortages and pressure from competitors. Hospitalwide communications systems may be the key to these facilities' economic health. *By Ellis Booker. Page 34.*

ISSUES & TRENDS

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GETTING THE MOST FROM EDI. *Page 7.*

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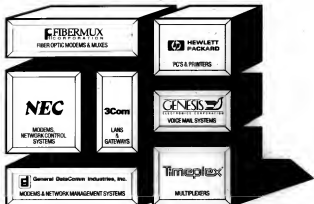
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In charge of systems integrators. *Page 18.*

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An IS strategy that's all business. *Page 42.*

Cover photos by, clockwise from top left: Rachel Johnson, Steve Searns, Rachel Johnson and Martha Everson.



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Under pressure
to do the right thing

I'm sure you have been between a rock and a hard place at least once in your career. By that I mean choosing whether to tell your boss what he wants to hear or telling him what would make the most sense technically over the long term.

In our cover story starting on page 12, four information systems professionals

tackle one such integration dilemma. Their solutions are a mix of innovative political footwork as well as sound technical and management advice. Read their analyses to see if you agree. You may even have a better answer of your own.

In IS, tough situations are part of the job. The idea of handing over a strategic project to a systems integration firm strikes fear in the hearts of some IS managers. The trick is to keep in-house control of vital technology resources while parceling out operational responsibility to outside firms. A number of IS chiefs reveal to writer Julia King (page 18) whether they believe this developing IS-systems integrator relationship can work.

And don't miss our look at two industries — supermarkets and health care — which have traditionally been slow to automate but which are being pressured

to integrate by rising costs and competitive forces.

On page 30, features writer Helen Pike takes a look at the Voss supermarket chain, an innovator in its industry.

In his story on hospitals on page 14, Ellis Booker examines how outside forces such as increased competition and labor shortages have meant high-tech medicine for health care.

As you can see from this issue, business and market forces are dictating the need for technology as a competitive tool. Read our On the contrary debate on page 10 for two conflicting opinions on whether a business strategist or career technologist should control the corporate IS asset.

I'd really like to hear your reactions to these stories as well as know what's happening in your industry or individual company. Send any comments and ideas to me, Ann Dooley, Editor, *Computersworld Focus on Integration*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Or call me at 1-800-343-6474 or our bulletin board at 508-626-0165.

Ann Dooley

in IS,
tough
situations
are part
of the
job.

*"Ok, maybe fiber is the medium
of the future, but I need to
wire my new facility today.*

*My reputation is riding on
those wires lasting 10 years.*

*Even if I think FDDI is a
good idea, it isn't here yet.*

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SAA SPARKS MINI MARKET FOR GRAPHICAL INTERFACE DEVELOPMENT TOOLS

Step right up, folks, and take a look at the latest mini market spawned by IBM's Systems Application Architecture (SAA). See software vendors line up to bring you new packages they say will cut the time and trouble from building CUA-compliant applications. That's Common-User Access, son...

CUA is a component of SAA that integrates applications at the user's desktop. It provides a single point of access to any compliant application, using menus, scroll bars and a point-and-click mouse interface.

Software vendors are introducing tool kits, in graphics- and text-based versions, that help the developer visually and functionally match the IBM

ing programs just to produce a CUA-style action bar.

Because Dialog System and other tool kits like it contain the necessary low-level programs for generating appropriate CUA panels and dialogues, the programmer can make conforming applications by simply pressing the right buttons.

Painting a CUA-style screen — with action bars, pull-down menus and pop-up windows — is as easy as sitting down at a personal computer equipped with the tool set, Gius explains.

With the help of these new tools, the programmer can create an application prototype, which can later be hooked into the program. It certainly sounds easy, but users should select their tool kits carefully, says Gary Coulter, technical support manager at Network Software Associates (NSA) in Laguna Hills, Calif.

Although they may share the goal of simplified CUA-compliance, each tool kit caters to different languages and platforms and different types of applications, Coulter says.

There are kits written for PCs in C, such as the AdapSNA Toolkit by NSA. This text-based package, due out in December, provides a CUA interface under PC-DOS, something IBM does not do.

What IBM has done, however, is team up with Interactive Images, Inc. in Woburn, Mass., to develop and market two graphical user interfaces for the PC, called Easel/2 and Easel for OS/2 Extended Edition.

Users should select CUA tool kits carefully.

There are also tool kits, such as Dialog System, for mainframe operators who want to convert Cobol applications for use across smaller IBM systems.

Vendors are jumping on the bandwagon, but who can blame them? If there's a buck to be made by hawking SAA CUA-related products, they reason, someone besides IBM ought to make it. — KIM S. NASH

NASH is an assistant researcher for Computerworld newspaper.

SQUEEZING THE MOST VALUE OUT OF EDI

Looking outward is sometimes the best way to look inward. So it is with electronic data interchange (EDI), a digitized method of exchanging documents such as invoices and purchase orders that is enjoying a surge of interest.

EDI presents both an opportunity and a problem, experts say. On the one hand, EDI makes it easy to move data around and thus come up with new ideas for manipulating and sharing it. On the other hand, it's easy to misuse EDI by applying it to jumbled manual systems.

"The companies that are getting the most out of EDI are the ones taking the hardest look at how else they can use that data," says Phyllis Sokol, manager of professional services at Ordiernet Services, a Columbus, Ohio-based division of Sterling Software that specializes in EDI services.

For example, the data from a purchase order can be passed from the shipping department to the traffic department for fulfillment, updated there and sent to the accounts receivable group for invoicing. A shipping order can be automatically generated and forwarded to a trucking firm

continued on page 8

NOTED

IN A SURVEY OF 41 INFORMATION SYSTEMS MANAGERS BY OUELLETTE & ASSOCIATES CONSULTING, INC. IN REDFORD, N.J., 19% SAID INTEGRATING IS AND BUSINESS WILL BE A KEY ISSUE IN THE NEXT FIVE YEARS.

PETER RUTER



specifications for CUA without undertaking the laborious chore of actually writing code.

"Time saved is dramatic," says Rich Gius, group manager of order processing systems at the information resources division of Baxter Healthcare Corp. in Deerfield, Ill.

Without using Dialog System, a \$600 text-based CUA tool kit from Micro Focus, Inc. in Palo Alto, Calif., Gius says he would have to spend a "tremendous" amount of time writ-

SYSTEMS INTEGRATION WATCH

GOT AN INCOMPATIBLE LAN PROBLEM?
CALL IN THE LITTLE GUYS

The problem of linking incompatible local-area networks has touched off a boom market in a niche of systems integration, and it's mostly small firms that are filling the gap.

The rush is caused by the proliferation of LANs that have been installed to serve a specific departmental function. IS departments are now faced with having to tie them together into a bigger network. Sales of equipment that handles this interconnection — bridges, routers, brouters, repeaters and gateways — has nearly doubled in the past year, according to International Resource Development, a market research firm in Norwalk, Conn.

The job of interconnecting LANs has fallen mainly to an emerging breed of business

Connecting LANs often demands the kind of multi-vendor expertise that big systems integrators don't provide.

called the network integrator.

Although retailing giant Businessland Corp. is the largest LAN integrator, according to *LAN Magazine*, the niche includes a lot of little-known firms such as Network Management, Inc. (NMI), Allied Data Communications Group, Inc. in Atlanta and PTXI, Inc. in Irving, Texas.

Fairfax, Va.-based NMI will do about \$20 million in wide-area network and \$30 million in LAN business this year, according to Howard Frank, the company's chairman.

One of the reasons the big guys haven't dominated the market is that LAN interconnection often demands the kind of multivendor expertise that big systems integrators don't provide. "The larger [systems integrators] generally limit themselves to specific prod-

ucts," says Tom Beddoe, president of Allied Data.

The firms particularly appeal to users with widely distributed networks and limited support resources. Using NMI "certainly doesn't cost us as much as hiring someone on staff," says Ken Zuvaren, a senior computer specialist at the Federal Deposit Insurance Corp. (FDIC) in Washington, D.C.

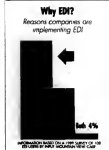
The FDIC has been using value-added resellers and network integrators for four years and is now launching a project to link its 3,000 personal computer users on dispersed Banyan Systems, Inc. networks into one wide-area network. Zuvaren says the systems integrator is not only a more cost-effective service provider but also offers perspective on the LAN market.

"We get a certain amount of what amounts to free technical consulting because we buy our hardware" through NMI, he explains. "For them, it's sales overhead, but for us, it's basically consulting." — PAUL GILLIN

EDI VALUE

Continued from page 7
and a ball of lading prepared for the shipment.

That's not happening at most companies, however, because EDI has been implemented in such a piecemeal fashion.



Prompted by suppliers and customers, individual departments have set up their own methods of sending and receiving documents electronically.

"If you could put a radioactive trace on EDI data, you'd find it coursing throughout the veins of the company," says Vic Wheatman, program director of interenterprise systems at Gartner Group, Inc., a consultancy in Santa Clara, Calif.

What can IS do to bring advantage out of chaos? Order-net's Sokol says upper management needs to be aware that EDI's benefits can ripple through the company, providing a cost-effective way to process information. For example, Digital Equipment Corp. says it cut the cost and time to prepare a purchase order by nearly 75% after implementing EDI.

Then, management needs to

What can IS do to bring advantage out of chaos? Make upper management aware of EDI's benefits.

give users and IS the go-ahead to analyze the existing manual systems and see how they can be improved. "If you have a chaotic manual system, you're just going to have a chaotic automated system," says Jerry Miller, vice-president of business development at drug wholesaler Bergen Brunswig in Orange, Calif. Over 90% of the money Bergen Brunswig spends on supplies is transmitted electronically, and it uses EDI throughout the organization.

Don't expect miracles, though. EDI's acceptance continues to be slow. Sokol tells how her company began offering electronic invoicing to customers a few months back. Although nearly all the customers are using EDI in some form, the vast majority have elected to stay with paper billing. — PAT GILLIN

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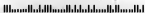
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DISKLESS, NOT POWERLESS: USERS BALK AT NETWORK CONTROL

As IS executives and end users continue their battle for decision-making power, the diskless workstation may become a tangible symbol of the political issues in the struggle.

From the perspective of information systems management, diskless personal computers solve two problems: They keep company data within the com-

pany, and they maintain current, glitch-free information. After each session on a diskless workstation network, users store all work on a central server, so they use only up-to-the-minute data.

Subtracting disk drives from networked PCs can mean significant savings for business, according to Glenn Fund, LAN installation coordinator at Sanders Associates, Inc., a Nashua, N.H., division of defense contractor Lockheed Corp.

Productivity has increased at Sanders, Fund claims, because central storage is more reliable. Diskless PCs also wipe out

the possibility of theft via downloading onto a floppy disk. Going diskless is perceived by IS managers as a neat solution to networking hazards.

End users don't see it the same way, however. When they give up their disk drives, they also relinquish a good deal of independence. Users can no longer run software of their choice and must abide by the laws of the network server that their diskless stations are tied to.

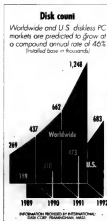
Users may understand the data integrity and security arguments for diskless PCs, but they insist that their resistance stems

from a larger issue, namely management's attempt to usurp control over networking, a traditionally user-run territory.

The fate of the diskless PC and workstation market hangs on what eventually happens to the control of networking in IS shops, says Bill Spencer, steering committee member of the New Jersey Novell Users Group. He expects that while there will always be a call for diskless PCs, particularly where data security is an issue, it's not until networking becomes a fully executive-run entity that there will be any real demand.

— KIM S. NASH

When they give up their disk drives, users also relinquish a good deal of independence.



E-MAIL TIES SURGE AS FIRMS MANDATE X.400

o the world of electronic mail, ease of transmission means interoperability regardless of pipe, platform or package, as well as a standard for transmitting messages. For E-mail, the standard is X.400, the Open Systems Interconnect's message-handling layer that enables E-mail transfer.

The Aerospace Industries Association (AIA), led by Hughes Aircraft Co., is at the forefront of the X.400 movement. The AIA served notice to its suppliers and government partners that X.400 is the required interface through which to do business with its member aerospace companies.

Within six months of laying down the requirements, most of the AIA's eight members, their suppliers and partners were able to demonstrate E-mail connectivity.

But the AIA isn't alone in mandating the use of E-mail and the X.400 standard.

Early next year, Eastman Kodak Co. expects to undertake an interoperability project of its own. The Rochester, N.Y.,

Because of the financial clout they wield, large companies will be the ones to lay down the law for customers and suppliers.

conglomerate wants to establish two-way data communications between itself and its customers, suppliers and research networks. Kodak uses IBM's Professional Office System (Profs) for E-mail and subscribes to the IBM Information Network (IIN), a public packet-switching network. Its target group does not have to use Profs or IIN.

Kodak already adheres to the X.400 standard for its in-house E-mail that allows 130,000 employees in 30 different business units to communicate. Kodak has pushed X.400 further to X.500 — the directory level — with an E-mail and voice directory of 90,000 employees.

As Kodak and the AIA push forward with E-mail interoperability via X.400, it is clear that because of the financial clout they wield, large companies will be the ones to lay down the law for customers and suppliers, says James White, vice-president of Rapport Communications, Inc., a consulting firm with offices in Oakton, Va., and Palo Alto, Calif. — HELEN PIRE

■ ON THE CONTRARY

A BUSINESS MANAGER SHOULD HEAD CORPORATE IS

PRO:
JON D'ALESSIO

The information systems function is the cornerstone of how companies compete. While the technology itself is important, more important still is the business advantage it gives an organization.

The question now is not whether the system will work but whether it meets the needs of the business better than its competitors' systems do. If it doesn't, the company may not survive.

With these high stakes and new rules, companies must put someone in charge of IS who can produce business solutions, who can talk to customers in their own language and who can bring a business perspective to the decision-making process.

A manager from a non-IS background who does these things on a daily basis is best suited to bring these critical skills to the information systems function.

In addition, a non-IS person can enhance the quality of technical decisions. The head of IS needs to focus on strategic issues. In making strategic technical decisions, IS managers must sometimes make trade-offs (reliability vs. speed, cost vs. function and so on). Deciding on the trade-offs in today's world must be driven by business knowledge.

Once the head of IS establishes the decision criteria, the IS staff can make technical evaluations secure in the knowledge that the decision is best for the company. Tactical technical decisions are made, as they should be, by technical experts within the strategic framework set by the IS executive.

Supported by a strong technical team, a non-IS manager can best forge the partnership between IS and customers needed to produce systems that provide competitive advantage and ensure a win on the corporate battlefield.

CON:
JIM YOUNG

I reject the inference that now that IS professionals have proven the strategic advantages of information systems, these systems are suddenly beyond our feeble ability to manage. Nothing is further from the truth. While non-IS professionals may occasionally make acceptable leaders for IS, the best choice is someone with an IS background.

I fully understand that the top IS job today is one of business executive and strategic company leader. However, as IS has become more pivotal

in companies, IS professionals have been compelled to develop a practical, well-rounded understanding of their firms, the industries they operate in and the marketing and financial dynamics that shape businesses. Today, as never before, IS professionals can share the strategic perspectives of a general manager.

Likewise, IS executives are developing pure management skills that permit them to successfully implement business visions. They have worked on talents such as communicating, influencing others, teamwork, multi-

discipline integration and adaptability: in short, skills needed to run corporate IS and be a member of the executive management team.

The IS professional's technical background is a decided advantage at the executive level. Forget skills such as programming or technical trivia. Rather, it is our experience and appreciation for technology that gives us insights into its strategic potential. The best choice to head the corporate IS function is an IS professional. Managers new to IS have and are doing this job well in some companies. But they do not have the ideal set of skills and insights that can come from a modern, well-rounded IS career. And IS is important enough today to deserve the best leadership.

AT ISSUE: Who makes the better corporate information systems executive — someone with a business or technology background? Two IS chiefs take sides on this galvanizing issue.



• **Jon D'Alessio** is vice-president, operations planning and information technology, at Halliwell Corp., a drug distribution company in San Francisco.



• **Jim Young** is vice-president of information and telecommunications systems at The Wheeler Group, a business supply firm in Hartford, Conn.



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Circle Reader Service Number 4

The case of the dual data centers

Frank Turner is faced with the task of phasing out the data center of a recently acquired company. Only he's come to realize that his own operation is the one that should be closed. Frank and the firms portrayed in the following case study are fictional, but the dilemma is the kind that any information systems manager might face. The case study begins on this page; following that, four prominent IS professionals offer their advice on how Frank should approach the problem.

BY PAUL GILLIN

Frank Turner closed his office door and sank into his chair. His presentation to the executive committee was tomorrow, and he didn't know yet what he would say. The CEO at Meridian Corp. wanted to know how Frank was progressing in integrating the computer systems of recently acquired Plymouth Instruments into Meridian's own data processing structure.

Frank was going to have to tell him that the project hadn't even begun yet.

The integration had seemed straightforward enough at first. Meridian, a \$500 million manufacturing company with 1,100 employees, had acquired the relatively small Plymouth Instruments and its 300-member work force in a friendly buyout two months earlier. Frank's directive from CEO Gerald McMahon had been clear: Close Plymouth's data center, integrate its reporting systems and do it within six months. McMahon's priorities were to keep costs low and ensure that Plymouth's financial and operating information could be quickly integrated with Meridian's.

It wasn't that easy. On his maiden tour of the Plymouth Instruments data center conducted by that company's affable but nervous IS manager, Frank Turner had come away im-

pressed. Plymouth Instruments was an engineer's company, and its founders had constructed the firm's 3-year-old information system with typical engineering fervor. Built around a network of reduced instruction set computing minicomputers and Unix workstations, the hardware

design was so modular that Plymouth could upgrade its processing power by simply linking CPUs together.

Company financial and operational records were kept on a highly integrated set of packaged applications and manufacturing resource planning software with information accessible from terminals and personal computers in every department. Reports were written quickly in a fourth-generation language that many employees were able to use after only four hours of training.

Even more impressive were some of the strategic systems Plymouth had hatched. An electronic mail network not only linked every Plymouth employee but also allowed the company's customers to dial up and match their technical requirements against a database of Plymouth products. Plymouth was less than a year away from going live with a \$700,000 project that would let field service representatives conduct remote diagnostics and automatically place orders for replacement systems directly from a customer's site.

In short, Plymouth's system was more flexible, sophisticated and maintainable than Meridian's. The small company had only 12 employees in its entire information systems department and a \$1.5 million annual budget. Meridian, in contrast, employed more than a dozen programmers just to maintain the patchwork of applications it had assembled during the last 15 years.

The harder Frank looked at the two systems, the more he was convinced that his own was the one that should go.

Dollars and sense

But that was the problem. Frank's quick-and-dirty calculations showed that it would take at least three years to make up the cost of upgrading Plymouth's hardware and network systems to handle Meridian's volume and of migrating the data to the new file structure. And that didn't include the additional training that would be necessary. Meridian had two years of depreciation left on its mainframe and the company was in the middle of a major order-entry project. All that would have to be scrapped. However, the long-term price/performance benefits and savings in personnel costs could be tremendous.

Frank pondered what he should tell the executive committee. Meridian had gone into debt to finance the Plymouth takeover. Pressure was on the bottom line. The CEO was not likely to warm to a long-term investment when a bad quarter could spell stock market disaster.

As he drummed a pencil on his desk, Frank wondered what his options were.



BY MICHAEL HESCHEL

CORPORATE VICE PRESIDENT, INFORMATION RESOURCES
BAXTER INTERNATIONAL, INC.

The objectives of Meridian CEO Gerald McMahon are "to save costs and ensure that Plymouth's financial and operating information could be quickly integrated with Meridian's." Frank Turner must support these objectives while at the same time provide the best systems solutions in the short- and long-term.

This is a classic case of what occurs in an acquisition — and it is what I experienced personally in the American Hospital Supply merger with Baxter Travenol.

Inasmuch as Frank does not have sufficient data to specifically justify the Plymouth system and to prove that Meridian's setup is an inefficient and unintegrated one, a specific system recommendation is not appropriate. Rather, he needs to communicate a recommendation that will evaluate his alternatives in a timely and effective manner plus provide the short-term information requirements needed to run the new corporation effectively.

My recommended steps, which were used in the American-Baxter merger, are given below:

- Step 1. Frank must first develop and present to the executive committee his plan for evaluating all systems alternatives, that is, Meridian systems, Plymouth systems, outside packages or some combination of these three — each option indicating where enhancements are needed to meet business needs. This evaluation plan must be timely (aggressive) and justified on the basis of the current situation — that there simply is no best alternative at this point.

- As part of the plan, he needs to communicate that he will provide system links to integrate

PHOTO COURTESY OF BAXTER INTERNATIONAL

• Cover story

operating data where necessary. This solution takes care of data integration problems for the short term.

Additionally, Frank should propose the formation of a user committee made up of key operating managers from both companies, including himself, and headed by one of the operating managers. I feel the highest ranking member is the best person for this position, because he will need to resolve key deadlock issues.

• **Step 2.** Once approved (Frank must stick to his guns if challenged), he must implement the plan posthaste. The first meeting of the user committee is vital, because it sets the tone to follow. The committee's mission is to develop and communicate its recommended systems for the new corporation, using input from the information systems function on cost, benefits, timing, desirable architecture and productivity. It is beneficial to involve an outside consultant to review the findings and to provide objectivity to the process and its solutions.

Frank should be the committee's secretary. As such, he would set agendas, coordinate analyses of issues, provide technical consultation, and communicate results.

• **Step 3.** During the review process, which probably will take about three months, the IS function must define short-term system bridges or links and implement them as appropriate to supply operating data for management.

If possible, it is helpful to provide customers with a capability, such as a single input mechanism for both companies' order-entry systems, that presents a single company image.

• **Step 4.** Once the user committee reaches agreement, Frank needs to present the recommendations to the executive committee. Top management support is absolutely essential to such a program's success. The support will be there as long as the recommendations include system benefits and achieve business operating objectives.

From this point on, solid project implementation and management are the obvious ingredients of success, along with continual user communication.

The biggest potential problem is that the CEO and his executive committee do not support Frank in Step 1, which may be a result of ineffective communication of the plan, short-term cost pressure, high expectations from the investment community or a combination of these three factors. Hopefully, Frank will effectively communicate his plan and win approval.

If, however, all else fails, then Frank will need to live with the executive committee's decision. ♦



BY RICHARD KOELLER

VICE-PRESIDENT, INFORMATION TECHNOLOGY
WHIRLPOOL CORP.

In reviewing the Meridian case study, it is essential to first understand the context within which the action will happen. What is the information systems role in this decision? Is IS simply to review and recommend? Is IS to implement that which others have already decided? It is also important to know the history of the information systems function within Meridian and thus how the executive committee views IS.

Understanding all of this, Frank should develop his executive committee presentation to include three things: First, an action plan to do exactly what he was assigned to do — convert Plymouth to Meridian systems; second, an alternative plan to convert Meridian to Plymouth systems; and third, a plan for a mixed solution.

His presentation should focus on costs, benefits, risks and timing — and he should conclude each alternative with an overall confidence factor based on his limited information. All too often, IS people underestimate the willingness of senior management to share the risks involved when limited data is available.

Frank should hit hard on the apparent advantages of the Plymouth system but balance that with the fact that he has limited data on which to base his judgment. He must also caution that the systems from such a small company may not be able to sustain the volumes that Meridian will require. Lastly, he must recognize that he has no basis on which to judge the efficacy or acceptance level of these kinds of systems within the culture and work habits of Meridian.

Frank should make a very strong pitch for time to explore the alternatives and to bring

PHOTO: JOHNSON-GRENA LIAISON

• Cover story

enough cost/benefit data to the table so the executive committee can make an informed decision. He should also demonstrate an attitude of willingness to move forward with whatever the committee decides, understanding that there

"Frank should make a very strong pitch for time to explore the alternatives and to bring enough cost/benefit data to the table."

are business issues that may override IS factors.

Finally, no matter what decision the executive committee makes, it is essential that Frank assures the group that he will continue to evaluate the situation and bring further recommendations to the committee when appropriate.

Throughout this process, Frank must fully understand the critical success factors (CSF) of his job in general and this large task in particular. The highest priority CSF is to "enable," not "disable," the merger. In this context, it is essential that Frank understand the outward impact on the company (that is, the stock market) as well as the internal impact on the company of any proposals that he might make. In the highly volatile environment that exists during the initial stages of the merger of two companies, such a proposal can be very disruptive to senior management.

The second priority CSF for Frank is the necessity of whatever he proposes to do being viable within the limitations of the operating climate, managerial restructuring and other changes taking place in the early stages of the merger. This is especially critical in an information technology project, because most of the work estimates, elapsed time projections and other subjective measures can be thrown off track during a period of great turmoil. IS customers' roles can change, key users can dramatically shift their priorities and so on, which can foil strategic plans.

The third CSF is the perceived economic feasibility of Frank's proposal in light of the very uncertain financial picture facing most newly merged companies. In this case, it is important that Frank clearly delineate fixed and variable costs, indicating the degree of flexibility that senior management will have over the duration of the project to either decrease or increase funding. He must also make sure he can get along with assets already owned by the merged company, including current personnel levels. Many times, the difficult part of a project such as this is getting approval for additional capital or personnel at a time when all the financial figures have been tallied to three

decimal places and checked prior to their release to the financial marketplace.

Depending on the organizational and managerial climate that exists, Frank is also well advised to confidentially review his thoughts and proposal with key customers and the information technology personnel who will have to buy into this approach and lead the project. Regardless of what prior work Frank does, he should pay close attention to the details of his presentation and the manner in which he presents his findings. If he is well prepared when he makes his proposal, if he makes the materials easily understandable and if he presents himself as a confident leader of the IS group, he will greatly enhance his probability of success.

In the end, it is up to Frank to use the best tools at his disposal and to get the assistance of as many colleagues as possible as he ventures into this complex and uncertain arena. ♦



BY GARY GULDEN

VICE PRESIDENT
INDEX GROUP, INC.

Frank has two options: sweep this golden opportunity under the rug and do as he was ordered or confront CEO McMahon with the facts and seize the opportunity.

Because I believe Frank will want to do what's right for the company, my first piece of advice to Frank may surprise some people: Don't go to the executive committee meeting tomorrow! Frank has to bring his message directly to McMahon, who gave him the charge in the first place, and must let him know right away that the two of them need to have a very important private conversation.

If tomorrow's meeting occurred as scheduled, McMahon would almost certainly feel

• Cover story

compelled to behave like a take-charge CEO. No matter how logically Frank argued for an alternative, in a committee meeting, he'd be sure to hear McMahon say, "Frank, read my lips!" Instead, by meeting privately with Mc-

"My first piece of advice to Frank may surprise some people: Don't go to the executive committee meeting tomorrow!"

Mahon, Frank allows his CEO to think about what he's been told, to roll ideas around and be momentarily indecisive.

Next, Frank must clearly communicate that he understands Meridian's strategic business agenda and what the Plymouth acquisition means to it. For example, Frank should remind McMahon that Meridian acquired Plymouth for its advanced product technology and close customer ties.

In this regard, Frank does have good news to bring the CEO. He's discovered in his study that Meridian got more value than it realized when it acquired Plymouth Instruments. The smaller company appears to have strategic systems in place or under development that will be tough for the competition to copy, and they play a key role in giving Plymouth the business edge for which it was acquired.

Frank needs to be clear about this point: McMahon must see that Frank understands the difference between a system that is technically sexy (but so what!) and one that supports a key operational activity of the business and gives it a distinct competitive advantage.

For example, Frank could point out that the remote diagnostics and repair parts order system looks like it will blow away the competition, from the viewpoint of customers who are critically dependent on instrument uptime. Frank might say, "And what this means to Meridian is that if we close down Plymouth's strategic systems, the company may not deliver the business leverage for which it was acquired."

Frank also has to be clear with McMahon that Meridian's own systems will require major investment sooner or later to catch up and allow the larger company to stay competitive. Thus, Frank should argue that the Plymouth acquisition presents an opportunity for Meridian to do more for less and with less development risk.

Finally, Frank should let McMahon know he understands the dilemma his CEO faces. "The good news," he might explain, "is that Plymouth has systems in place that will make it very tough for the competition to keep up with us in

the future. The bad news is, who wants to face up to more investment at a time like this?"

Frank should be prepared to demonstrate to McMahon that he's been doing his homework. He must let his CEO know he is looking carefully at a number of scenarios to blunt the financial impact of retaining Plymouth's advanced system while repositioning Meridian to capitalize on the opportunity Plymouth presents. He should ask McMahon for more time to work out the tactics.

But the bottom line may still be higher short-term operating costs and the need for an immediate investment with a three-year payback. My advice is to be clear about this situation, telling McMahon, "I know that's not what you want to hear, but here's what's likely to occur to the company's competitive posture and financial standing if we don't face up to the facts."



BY MAX HOPPER

SENIOR VICE PRESIDENT, INFORMATION SYSTEMS
AMERICAN AIRLINES

I shall assume that Frank Turner's relationship with CEO Gerald McMahon and Meridian's other senior officers is at an acceptable level. I shall also assume that the study was completed in an acceptable time frame and that Frank has access to the CEO.

However, in view of the fact that Frank was evidently not involved beforehand in reviewing the Plymouth Instruments acquisition and in the decision to combine the systems, it would appear that the executive committee does not necessarily seek his input in strategic situations.

The situation offers Frank an opportunity to demonstrate the value of his own counsel and

• Cover story

allow the CEO to show his capabilities — a win/win situation. This premise assumes that the CEO is in a strong position and willing to assess the long-term consequences of decisions, even if investments are tough to make. A recommended approach is for Frank to put together — today if possible, but certainly prior to the executive committee — a short-summary of the findings of the Plymouth evaluation, including the economic consequences, and seek a meeting with McMahon.

Frank should be prepared to offer the CEO a choice of completing the assignment is originally projected or of setting up a full review by the members of key corporate units affected by a switch in strategy. These would include the finance units that may possibly need to explain a changed approach to the investment community, the operational units that would be the chief beneficiaries of the new systems approach and the systems staff.

To present such a major change in strategy, Frank must investigate and evaluate all potential benefits and risks. Thus, by allowing McMahon to learn in advance of the possibility of a new approach and to determine whether he wants to pursue it, Frank avoids a major surprise while providing an opportunity for his

company to gain strategic advantage over its prior situation. Frank also allows the CEO to learn the value of reviewing all possibilities.

In the event that the CEO favors the short-term benefits, Frank should be prepared to consider some middle approach for a long-term change in strategy.

In summary, given the critical time frame, Frank must not surprise the CEO, must seek overall corporate support for a new system strategy and must accept the fact that the company's first objective is economic survival. ♦

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- KOLLER is vice-president of information technology at Whirlpool Corp., a Benton Harbor, Mich., manufacturer of home appliances.
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• Critical decisions
.....

Blockbuster information systems deals between corporations and systems integrators remain few and far between

Trusting outsiders *with* strategic projects

BY JULIA KING

E

arlier this fall, Merrill Lynch & Co. awarded a \$50 million contract to MCI Communications Corp. and IBM to jointly operate and manage its massive communications network. When it did, it handed over responsibility for one of the world's largest private communications networks and the very backbone of its multi-million-dollar business. But what

King is a freelance writer based in Ridley Park, Pa.



the brokerage giant did not give up was its control over these vital resources. Instead, it hand-picked 20 in-house people who, as a group, will manage and oversee all MCI-IBM network activities.

"This way, we can have our cake and eat it, too," says DuWayne J. Peterson, the brokerage's executive vice-president of operations, systems and telecommunications. "Giving up control is dangerous and holding back these people is our way of holding on to control over these very strategic resources."

The Merrill Lynch project illustrates what many observers view as the largest factor stalling a forecast boom in systems integration: information systems managers' unwillingness to give up control over major projects and assets. Combine this unwillingness with many users' perception of systems integrators as high-priced hardware and software vendors in search of new customers, and it becomes clear why the systems integration market hasn't taken off.

These days, it seems as if everyone is a systems integrator capable of furnishing customers with a "total solution."

For the most part, though, users just aren't

buying in, according to Jeffrey Kaplan, an analyst at The Ledgeway Group, Inc., a Lexington, Mass.-based research firm.

Budgeting budgets

Users' unfamiliarity as well as their reluctance to turn over large and strategic projects to outsiders is clearly reflected in their information processing budgets. In the last year, for example, Ledgeway estimates that the dollar value of projects turned over to outsiders by big customers averaged less than \$100,000, with most projects lasting less than a year.

What's more, customer spending on outside professional services as a percentage of total IS budgets will not rise significantly during the next two years, according to Ledgeway's survey of more than 600 IS managers at large companies and government agencies.

Customers say they're contracting with systems integrators out of need rather than choice, parceling out tactical rather than strategic projects — projects for which they lack either the expertise or the time to complete themselves. Typically, these are short-term contracts involving custom programming or one-shot installation projects such as cutting over from a



CAROLINE ALTEIRO

new computer or communications system to another. But even in these situations, IS managers insist that it is crucial for an in-house team to retain control.

According to Dennis Connor, senior IS director at Dallas-based Greyhound Lines, Inc., the surest way to maintain control is to assume responsibility for the project. At Greyhound, for example, internal IS personnel handle all design aspects of a project and ensure that the technology and architecture in any new system meet the needs of the company. From this point, a systems integrator may go to work, but only under the supervision of an in-house Greyhound project manager.

Calling the shots

Most customers not only demand to be included but also demand that they — rather than the integrator — call the shots. At Merrill Lynch, for example, it was this key point that ultimately determined the contractor on the brokerage's plan network project. Another bidder, Electronic Data Systems Corp. (EDS), was spurned by Merrill Lynch as a result of EDS' autocratic approach.

"We considered EDS," Peterson says. "But it was telling us, 'This is the way you'll operate, this is the way it will be.'" Meanwhile, he adds, "We were looking to retain control, and we feel much more comfortable under the scheme we now have."

According to EDS spokesman Roger Still, customers should not draw any conclusions about how the company works with its clients in EDS' dealings with Merrill Lynch. "You can't make generalities from what happens with one specific customer," Still says.

"EDS is flexible in the services it provides. There's no way a company of our size could be as successful as it is if it wasn't," he adds.

At Green Bay, Wis.-based Schreiber Foods, Inc., IS Vice-president Jay Hamann sees a similar need to ride herd over system integrators, which he likens to consultants.

"To get your money's worth out of a consultant, you have to manage that consultant. That means you need a core team from in-house to review



MERRILL LYNCH'S PETERSON says giving up IS control is dangerous.

and analyze the work," Hamann says. "If you don't, I don't think the results will ever be what you want them to be."

Schreiber has confined its use of systems integrators to custom programming and software modification

can do can be done cheaper in-house. Hamann, for example, determined that his staff can design and install a serviceable manufacturing cost system for \$750,000 as opposed to the \$4 million quote he recently received from a systems integrator. He attributes the differential in cost to what he believes is systems integrators' "tendency to overengineer."

"Systems integrators tend to do more things than they need to," Hamann says. By contrast, he adds, "When you take on a project in-house with only so much money, it forces people to design and build exactly what's necessary."

He compares the \$4 million and \$750,000 systems to a Mercedes Benz and a Volkswagen, respectively. There's a huge difference in price and some difference in capabilities, but both meet one's need for transportation.

Given adequate manpower and time, most managers also believe that in-house personnel are the best people to implement an integration project because of their familiarity with their company's objectives

"To get your money's worth out of a consultant, you have to manage that consultant."

JAY HAMANN
SCHREIBER FOODS

projects. For larger projects, such as the design and installation of a new manufacturing cost system, it relies on in-house expertise, for both control and cost reasons.

In-house specials

Costs are a key consideration for most IS managers, who often believe that whatever a systems integrator



At this point, it's hard to tell which end of the system is in charge.

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and way of doing business.

"One of the biggest problems with systems integration is that often, vendors will come to a project without really understanding what they've been asked to take on," says Max Hopper, senior vice-president of information systems at American Airlines in Fort Worth, Texas. As a result, he adds, "Low-balling up front by vendors is a real problem. A price will be established, and then the vendor will try and come in and renegotiate that price."

Not surprisingly, systems integrators take a different view. In the final analysis, they say, a systems integrator is cheaper than most people think

"Holding back [systems integrators] is our way of holding on to control over these very strategic resources."

DUWAYNE J. PETERSON
MERRILL LYNCH

and can offer more than technical know-how and bodies to help meet tight project deadlines. As for customers' concerns about retaining control, some assert that customers actually have more control over a

systems integrator than they do over their own in-house personnel.

"The fact is that managers can replace a vendor or systems integrator a lot more easily than their own people," says Howard Frank, president of Network Management, Inc., a Fairfax, Va.-based systems integrator specializing in communications systems. "With the labor laws the way they are, managers have very little control, which makes it very difficult to fire poor performers."

Frank says control issues are often tied to the perception that a manager's corporate clout depends on the number of people he manages. "There's a resistance to systems

AVOID THE ROCKY ROAD TO INTEGRATION

YOU WOULDN'T go to a surgeon who had never performed an operation. You wouldn't go to a lawyer who'd never tried a case. Why would you hand over strategic IS operations to a systems integrator without experience?

That's advice well-taken by Ron Anderson, assistant financial director for the city of Fresno, Calif. In retrospect, Anderson says, the city's installation of an integrated payroll, personnel and budgeting system would have gone a lot more smoothly had city officials made sure to hire a systems integrator with a proven track record not only in municipal government installations but also one with experience on the same equipment used by the city of Fresno.

Promises, promises

Originally, the systems integrator Fresno hired had said it would take four months to get the software up and running. That was more than a year ago. Today, Anderson reports a "plain-vanilla version" is on-line but that the city has yet to try out all of the promised bells and whistles. It won't have that opportunity until sometime in 1990 or 1991, he says.

Fresno encountered numerous other systems integration problems as well, Anderson reports.

"We did not go through the traditional approach of developing exact specifications. As a result, our steer-



THE CITY OF FRESNO'S ANDERSON warns of disgruntled staff.

ing committee was asking questions and waiting for answers while the integrator was on site." Further, he adds, "If we knew what we wanted and took the time to develop the specifications plus have in-house people ride herd over the integrator, we could have fared a lot better."

Anderson also warns other users to beware of employees who may be-

come disgruntled over being excluded from the whole systems integration process.

"Employees view change very suspiciously, especially when they feel they're not included in the process," he says. In Fresno, for example, the city's hiring of a systems integrator remains under the watchful eye of the grand jury, a process that Anderson believes was initiated by a disenchanted city employee.

"The county had acquired similar software years back, and there were problems with payoffs to the vendor," he explains. "Rumors began to spread that we had acquired the same software and were doing the same thing. That's how the grand jury got involved."

In the case of the county, the grand jury had actually indicated some officials on counts of receiving kickbacks and purchasing a system without first putting it out to bid. In the city of Fresno's case, however, no charges have been filed. The grand jury's charter is solely to oversee the purchasing and installation of the new system.

integrators among those managers who think the importance of their job is measured by how many people they're managing," he says. And it won't be until this view changes that systems integrators will gain the same kind of acceptance among commercial clients as they already have in the government sector.

At Chicago-based Andersen Consulting, John Oltman, managing partner of integration services, is optimistic about just how long it will take systems integrators to take hold in the commercial sector. Last year, he says, Andersen derived about \$800 million, or 55%, of its revenue from systems integration work. By 1993, he estimates, that figure will increase to between 85% and 90%, the bulk of it from large soup-to-nuts contracts.

Winning over IS

One Andersen strategy for winning over corporate IS departments is to "co-venture" with companies, sharing in the financial gains — and losses — of certain systems integration projects. However, the firm would not give specific examples in which co-venturing worked.

"This [strategy] plays to the MIS executive's transition from a technical or data processing person to a boardroom executive," Oltman says. "MIS people are beginning to be measured in how much they return to the company rather than in how many MIPS they manage."

Some users agree that a shift in managerial philosophy is beginning to take place at large companies, a shift that could alter their need to retain ultimate control over day-to-day operations.

At Greyhound, for instance, Connor says, "If I hire a systems integrator and the work ultimately benefits my company, I've made the right decision and will be recognized for that. Losing control doesn't bother me if it's a benefit to the company."

In order for companies to reap the greatest benefit from systems integrators, vendors and users agree that a high level of cooperation is necessary between the two groups. And both must do their homework. For users, this entails detailing exact specifications from systems design to



SCHREIBER FOODS' HAMANN says for best results, involve in-house staff.

evaluation criteria prior to putting out requests for proposals. Adapso recently established a committee that is now working on such standards.

For systems integrators, homework means developing a track record.

"MIS people are beginning to be measured in how much they return to the company rather than in how many MIPS they manage."

JOHN OLTMAN
ANDERSEN CONSULTING

ord in a specific area. At American Airlines, for example, Hopper says he would consider hiring a systems integrator on a strategic project only after that vendor proved it had experience elsewhere in the new technology or services it claims to offer.

"Strategic systems have to be tai-

lored," Hopper says. "I'd want to see that better mousetrap proved in at two or three other places first."

All in all, users and vendors alike agree that, as with any new concept or practice, it will take time for systems integration to take hold in the commercial sector. And certainly, they say, one of the first issues both sides must resolve is who will retain control.

For the time being, many users are looking to Merrill Lynch, IBM and MCI to set the pace on this issue, according to Ledgeway's Kaplan. Also of note is IBM's recent pact with Eastman Kodak Co., in which Kodak will maintain a centralized IS operation that will concentrate on applications development and strategic planning while IBM handles day-to-day operations.

"The Merrill Lynch and Kodak deals are for now certainly the bellwethers of the systems integration industry," he says. "Many users are waiting to see what will happen with these projects. If they fail, it will only serve to justify users' current apprehension."



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• Vendor directions
.....

It's crunch time at Unisys. With its financial performance lagging, the company is fighting back with niche marketing, Unix and better customer support.

Integration in progress at *Unisys*

Unisys Corp., the computer industry's sprawling amalgam of two mainframe companies, a Unix and personal computer firm and a wide-area networking company, is an organization that may be on the verge of integrating itself before it's too late.

Peter Bakalar, marketing and analysis vice-president at the Blue Bell, Pa.-based company, describes it this way. "Before, we sat in a tower and sprayed the marketplace, then we'd go out and pick up what we hit."

"Now, we shoot in a restricted range. We got sights for the rifles."

Unisys is setting its sights on a market strategy more focused on niches in which it has a mature presence, and then it is crossing over to

build market share in adjacent markets, or what Bakalar calls "services."

The Unisys strategy works this way:

- From the airline reservations business, Unisys hopes to spread into the travel services market.

- From automating bank branches, Unisys hopes to provide check processing services.

- From the Department of Human Services and the Pentagon, Unisys hopes to sell computers and networks to other areas of the federal government.

- From automating billing, Unisys hopes to sell to other savings and loan industry services.

"Our integration strategy is to provide information technology supportive of our customers' business plans," adds Henry Foxwell, Unisys' senior director of architectures and integration. Referring to the research and development dollars invested by all the acquired companies, he adds, "We have expertise in all these areas. We will make sure all the strategic products integrate."

BY HELEN PIKE
INTEGRATION STAFF

The sweep of that statement encompasses enterprise networking from gateways to IBM's Systems Network Architecture (SNA) to the Open System Interconnect (OSI), including X.400 for message handling and X.500 for directory assistance. The plan also includes interfacing its fourth-generation language products — called Mapper, Linc and Ally — into the company's database management system and third-party partners' DBMS.

Furthermore, the strategy includes a deal with AT&T for its OSI-based Unified Network Management Architecture, in which Unisys will market the company's Accumaster Integrator, a central network management system for multivendor networks.

Unisys will also enlarge its sights to include open systems, such as AT&T's Unix System V, and will embrace international standards wherever possible.

In a controlled product roll-out scheduled for the early 1990s, Unisys will bring out standard Posix interfaces to its Burroughs and Sperry mainframe operating systems, in an effort to interconnect the two lines. The Posix interface will allow porting of applications between these and any other Posix-compliant environment, the company says.

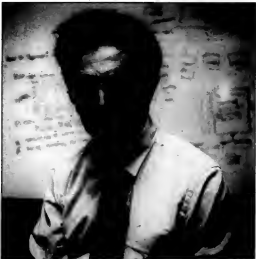
If there is any one user who exemplifies what Unisys believes is its customer of the future, it may be Lib/Go Travel, Inc., a \$1 billion wholesale and retail travel agency in Ramsey, N.J.

"The guts of this business is put together using Line," says Robert H. Dever, information services vice-president. In two weeks, Dever had an application prototype with the fourth-generation language, and in three months the program was up and running. Liberty Travel, the information systems operations for Lib/Go, supports 17 active databases and 2,000 on-line travel agents performing between 80 and 90 transactions per second.

With the help of Unisys' networking expertise, Liberty Travel has high-speed network links through X.25 to the American Airlines Sabre reservations system, a bi-

synchronous hookup to credit card companies that use mostly DEC or IBM equipment and an SNA link to an IBM 3090 machine at Alamo car rentals.

Dever, who says Unisys equipment is usually delivered on time and rarely breaks down, admits there's also room for improvement. "It should not take a [Unisys] salesman weeks to submit an order. That should be simple," he says.



UNISYS' BAKALOR says the firm is taking more careful aim at the market nowadays.

Soon it should be. In an effort to modernize the sales force, Unisys' IS department recently outfitted 650 sales representatives with Sales Rep Workbench, a menu-driven system for order entry and better customer record keeping that is intended to help them with service and support.

Now the question that remains is whether all of this effort is too late to save the company, which some observers fear may be another Wang Laboratories, Inc. — too focused on its traditional installed base to be able to market its leading-edge technology to new customers.

"If Unisys is not talking about

how it's going to position its Unix server to take a leadership position, I'd be worried," says Marty Gruhn, an industry watcher based in Mesa, Ariz. "Network computing is the tail that wags the dog these days. Unisys has the opportunity to position itself as the company for work group computing. But it could get lost in its mainframe heritage."

In Gruhn's opinion, it's still an early call on what Unisys will look

like in the next two years. "It's like the company is trying to bang too many different jigsaw puzzle pieces together," she adds.

Like Gruhn, Marc Koppelman, sales and marketing vice-president of The Small Computer Co., a Unisys value-added reseller in Hawthorne, N.Y., believes "Unisys has superior technology and engineering. Its products run as advertised."

The problem, Koppelman says, has been marketing and support.

That's an observation Unisys' Foxwell doesn't dispute. "One of our biggest weaknesses is lack of marketing and advertising ... We've been

preoccupied with too much detail and not enough of the big picture. Our customers haven't seen a unified picture."

Gene McTear, information services vice-president for Spartan Mills, Inc. in Spartanburg, S.C., agrees with that assessment.

"My problem is to survive and stay in business another hundred years," says McTear of the \$500 million textile manufacturer's IS shop, which has nine Burroughs mainframes, two Digital Equipment Corp. VAXs and 200 IBM Personal Computer compatibles. And he wants Unisys to help him do that.

However, there's a problem when money must be spent to hire consultants to finish the jobs McTear says are delivered incomplete to Spartan Mills. McTear observes that Unisys is not one company, but two — "not Burroughs and Sperry, but marketing and engineering. If equipment comes in missing pieces — and it has — engineering blames sales."

And that's not all. In the process of trying to fit together Burroughs, Sperry, Convergent Technologies, Inc. and Timeplex, Inc., Unisys missed some of its delivery dates for product upgrades, failed to anticipate this year's slowdown in mainframe buying and as a result incurred \$500 million in excess inventory. It also



CREIGHTON UNIVERSITY'S AULT wants Unisys to forge closer ties to its customer base.

failed to promote a coherent marketing strategy for its product families.

At midyear, the firm had a net loss of \$25.1 million on revenue of \$4.78 billion. If the firm does not post a loss when its fiscal year ends Dec. 31, it will just barely break even. Such a performance will indicate the company still has a long, long way to go financially to fulfill Chairman W. Michael Blumenthal's boast that the merger and acquisition strategy that

created Unisys would generate \$20 billion in revenue by 1991.

To put it bluntly, "The fusion of corporate cultures didn't work," says Michael Gerz, an analyst at The Nikko Securities Co. International, Inc. in New York on the eve of the disastrous third-quarter results. "Unisys is chaotically decentralizing ... and the business environment is forcing it to change more."

Indeed, last month, it all caught up with Unisys. In a drastic effort to return the company to sounder financial footing and trim costs by \$500 million, Unisys began laying off 8,000 of its 89,000 worldwide employees and closing down a mainframe plant, a computer power supply and engineering facility. It also began to phase out a disk drive plant.

In addition, there is the pledge by James A. Unruh, Unisys' president and chief operating officer and Blumenthal heir-apparent, to emphasize software over hardware; 30% of Unisys' research and development budget goes into network software and applications (1988 total R&D was \$713 million). He has also promised a more one-to-one relationship with key customers.

However, "talking about business plans is not as good as knocking on doors," says James Ault, IS vice-president at Creighton University, a



SPARTAN MILLS' MCTEAR thinks clients need a unified picture.

private Jesuit institution located just outside Omaha. Ault, who is also president of Uco, Inc., the Sperry mainframe user group, frequently has the ear of Blue Bell executives and isn't afraid to speak his mind. "I hope [Unruh] fires anybody who isn't directly involved in R&D, manufacturing and sales and distribution," Ault says. "He should get [Unisys] people the hell out of Blue Bell and find out what's going on in the customer base."

One thing they would find are IS managers under pressure from upper management to drop Unisys for the revitalized and ever-present IBM. Ault says when he was confronted with this mandate, his financial analysis to make the conversion from a Unisys to IBM environment showed such a move would cost the equivalent of 30 faculty positions. The administration changed its mind, he adds.

Ault remains loyal to what he says is a low-cost alternative to IBM. So much so that he is considering Un-

isys the "odds-on favorite" to win Creighton's fiber-optic network contract for its campus-wide communications backbone.

And that's the kind of news Unisys likes to hear. Foxwell, who helped design Sperry's distributed network in the 1970s, believes October's restructuring is the final leg in the transformation of Unisys into a coherent corporation. For one thing, the restructuring pushes the decision-making process down into the different divisions that promote Unisys' integration strategy. And for another,



UNISYS' FOXWELL wants to support customer business plans.

Unisys customers all have different business needs, requiring different technologies. Unisys, Foxwell says, is in a better position to deliver now than it ever has been.

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“L BY HELEN PIKE
INTEGRATION STAFF

et's face it," says Richard Silvers, information systems vice-president of The Vons Companies, Inc., a \$3.9 billion supermarket chain, "We're in a crazy business. We're all trying to sell the same bottle of Heinz."

The grocery market is traditionally a high-volume, low-margin, conservative industry. But times are changing, and the challenge is getting keen as the labor pool shrinks, the consumer economy stagnates and larger and larger chains meet head-on in regional competition. To outsell one another, supermarkets are experimenting with a growing array of electronic equipment to gather, sort and integrate information that can provide them with crucial data on customer buying habits and the efficiency of their own operations.

Silvers is attempting to introduce a number of these competitive innovations at Vons,

which is based in El Monte, Calif.

Pulling out his wallet, he extracts a thin plastic card. "I can check out my own groceries with this. Just key in the numbers and pay for it electronically."

Nodding toward a copy of the daily newspaper sitting on the corner of his desk, Silvers says, "Hardly anyone clips coupons anymore. Takes too much time. And it's expensive to run those ads in a newspaper. We're trying to do it electronically, by crediting members of our Valueplus Coupon Club at the end of each month." Members of the club get a magnetic-strip card that a checker pastes through a machine. Discounts are automatically deducted for items on special.

And a little later in the conversation, Silvers picks up a small white plastic rectangle from his desk and pointing to its even smaller digital screen, says, "We hope to send signals from a





THE VONS COMPANIES' Silvers wants to save shoppers time in the checkout lane.

central location to change the prices on these shelf tags. For some products, the prices change almost daily. That's a savings in labor if we can do it electronically rather than send someone out there every time the price changes."

Vons is one of the country's largest regional supermarket chains with 330 stores. It is also regarded as a leading experimenter of technology. "We think we can use technology to help us put that product on the shelf a little cheaper than our competition," Silvers says.

At least Silvers hopes so. He has a \$250 million IS budget, a staff of about 250 and the support of Vons' chairman Roger Stangeland.

"Vons doesn't look at information systems as a stepchild but as an integral part of the company and decision-making process," Silvers says.

"We think we can use technology to help us put that product on the shelf a little cheaper than our competition."

RICHARD SILVERS
THE VONS COMPANIES

"Roger allows you to make mistakes [because] not everything new is going to work."

This fall, for example, Vons is beta-testing Videocart from International Resources, Inc. in Chicago. Each cart is outfitted with a 6- by 6-in. video terminal and a sensor. As a shopper walks through a store, a corresponding sensor at the end of each aisle will activate vendor commer-

cials and store specials on the video screen.

Silvers isn't sure how well the video cart will go over with shoppers, but like so much of what he has looked at and implemented, it's worth a try if it can boost revenue.

"We're a very big on-line real-time company," he says. "We need real-time checkout on-line."

Considering the five million or so customers who pass through Vons' chain of supermarkets during any given week, time spent in the checkout lane becomes a critical service factor. When prices are rung up manually on a register, only 15 to 18 items can be moved a minute. With scanner technology, 25 to 28 items whiz by a cashier on their way to a grocery bag.

According to Silvers, with the added service of electronic funds transfer, customers can pay for their groceries in 14 seconds compared with the 25 to 35 seconds it takes to write a check. All Vons needs is a plastic bank card with a magnetic strip to debit a customer's account.

"Our labor costs are so high in the grocery industry and people so hard to come by that we need to look at different ways of saving people," Silvers says.

Behind the scenes

But he isn't just talking about front-of-the-store operations. Behind the scenes, in warehousing and distributing inventory, there are economies of scale to be gained by using technology.

Vons maintains 11 warehouses that carry inventory valued at around \$80 million. "We want to reduce that by \$8 to \$10 million," Silvers says about a program aimed at tighter inventory control. To do that, Vons has implemented an on-line tracking application on an IBM 3090 that oversees buying, receiving, billing and shipping — all the way to store delivery.

"We know where a product is at all times — from the time it's

ordered until the time it's sold," Silvers maintains. So far, Vons is saving about \$6 million with fewer forklifts, less manpower, less paper and lower inventory. The tracking system cuts down on the need to stockpile inventory now that it is more closely counted.

In the grocery industry, supermarkets earn between two and four cents on every pretax dollar. Vons competes with two other chains in Southern California for those pennies. Two years ago, there were five big-league supermarkets. This year, there are three in a market valued at \$23 billion.

"The pie isn't getting much bigger," comments Sarah Stack, a securities analyst at Bateman Eichler, Hill Richards, Inc. in Los Angeles. Vons has the largest share of the market at 23%. Its closest competition is privately held Lucky Stores at 15% and Ralphs Grocery Co. at 13%.

In the grocery industry, supermarkets earn between two and four cents on every pretax dollar. Vons competes with two other chains in Southern California for those pennies.

Vons grew its market share, in part, by acquiring the 162-store Southern California operation of Safeway Stores, Inc. last year. During the last 20 months, Vons has been in the process of converting those stores to its IBM computing culture — a task that has been a full-time job for about one-third of Silvers' IS staff.

Front and back

But before 1988, Vons had embarked on an efficiency program to automate, integrate and update not only its backroom operations but its front-of-the-house systems as well. It occurred about the time Silvers joined Vons as IS vice-president three years ago. At that time, a drop in hardware

NEW TASKS FOR SUPERMARKETS

VONS' EFFORTS have earned it a reputation as one of the country's innovative supermarket companies. Willard Bishop, president of a mass-merchandising consultancy that bears his name in Barrington, Ill., places Vons among the Top 12 regional supermarket chains that readily try out new technology — a distinction, to be sure, in what is generally regarded as a conservative and hard-to-automate industry.

"It is a much more complicated environment to integrate than finance is," Bishop says about the sweep of data that stores maintain on everything from products with short-shelf lives to day-to-day price changes to suppliers and even to the finicky buying habits of consumers.

The supermarket industry is on the verge of implementing technology that will give it and suppliers details on consumers that they've never had before, according to Bishop.

Indeed, he adds, the increasing use of technology is a trend across the mass-merchandising industry. As a result, information systems managers will be asked to come up with integrated applications and communications to handle the new ways of doing business. The emerging issues include the following:

- **Category management.** Stores will move away from item-level analysis. Instead, they will tailor a category of products to the needs of area customers as a way of differentiating themselves from local competition that are selling the same merchandise.
- **To do category management,** IS will need to formulate applications to handle space management, promotional analysis, price analysis and local market potential analysis.
- **Electronic marketing.** Retailers will implement new tracking programs so that they can identify and deal directly with individual consumer needs.
- **Electronic benefit transfer.** Retailers will install store-level terminals that can handle, for example, the transmission of electronic food stamps.
- **Communications switch ownership.** Retailers will have to decide if they want to own the channel between store-level terminals and banks, credit-card processors and other institutions involved with check-out transactions and if they want to assume responsibility for processing those transactions.
- **Scan data quality.** Interest is growing in using data generated by scanners to improve operating efficiencies in applications such as computer-assisted ordering.
- **Short shelf-life products.** Stores will need more timely communication between their retail operations and the sites that process and prepare perishable foods in order to respond to the growing consumer need for fresh foods.

and software prices, he says, made automating a more economically attractive proposition.


"In the past, we had a dial-up line for order entry, a dial-up line for point-of-sale and a dial-up line for everything else," Silvers recalls. And the dial-up phone bill amounted to \$3.5 million a year.

But in its program of greater efficiency, Vons replaced those dial-up lines with a single dedicated cable whose bandwidth could handle more

capacity for technologies such as electronic mail and electronic funds transfer.

About \$400,000 has been eliminated from Vons' phone bill so far, and, Silvers says, the company is looking at satellite technology to bring the costs down even more.

"Anything we do at the store level or at our distribution center should make us more efficient," Silvers says. "If it doesn't, then we shouldn't put the technology in."



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*The Wall Street Journal (1987); "Survey of the Information Processing Marketplace."

*The McGraw-Hill (1988); "Information Systems Management Needs."

COMPUTERWORLD

A systems remedy for hospital costs

BY ELLIS BOOKER

Hospitals present a unique integration problem. Where else can a piece of data literally mean the difference between life and death?

Although hospitals have not traditionally been hotbeds of computerization, economic factors are changing all that. Along with skyrocketing operating costs and a national nursing shortage, hospitals now face stiff competition from new kinds of health care providers, such as health maintenance organizations.

In addition, insurance companies and Medicare have shifted to fixed-scale reimbursement for treatment, making it advantageous for hospitals to manage costs as efficiently as possible.

Sacred Heart Hospital in Eau Claire, Wis., saved \$1.2 million on a budget of approximately \$40 million during 1986, a year after it installed its administrative/clinical information system from TDS Healthcare Systems Corp. in Atlanta.

As a result of the system, the facility was able to avoid hiring the equivalent of 50 full-time employees, says Linda Felty, who is responsible for Sacred Heart's benefits realization program.

The well-being of hospitals is in peril. Under pressure to cut costs but not the quality of patient care, these facilities are undertaking an extensive program of computerization.

The electronic system, represented by 90 terminals throughout the hospital, has also increased the speed and accuracy of processing orders. "It now takes five minutes to do a doctor's order instead of 20," Felty says, adding that the centralized system has done away with cumbersome multipart forms.

Like Sacred Heart, Hillcrest Medical Center in Tulsa, Okla., has become more efficient with its hospitalwide computer communications system.

According to John Cooper, director of data processing at Hillcrest, his 646-bed facility began moving from a paper system for billing and payroll in the mid-1960s, followed in 1971 by a communications network.

"We were one of the first to integrate a laboratory information system with a hospital information system," Cooper says. That application, in operation

BOOKER is the Midwest correspondent at Computerworld newspaper.



JOHN HILL/CLINICA & LIAISON

HILCREST MEDICAL'S COOPER says his facility's integrated laboratory and hospital system has eradicated transcription errors.

since 1977, lets a nurse input an order to the laboratory computer, which in turn manages the particular test, associating a bar code with the test sample. Later, test results are passed back to the nursing terminal.

"The real value here is the lab result is never transcribed by hand, so you never have transcription errors," Cooper explains.

What's more, doctors, nurses and administrators can use one of hundreds of terminals scattered throughout the hospital to order medications, view laboratory results or discharge patients.

Novel applications are possible, too, under an integrated approach.

At Latter Day Saints Hospital in Salt Lake City, an innovative on-line

expert system is a feature of the homegrown Help Evaluation through Logical Processing (HELP) system. Developed over the past 15 years, HELP, along with integrating administrative and clinical functions, can actually assist doctors in selecting the right medicine mix.

Reed Gardner, co-director of medical computing at the hospital and a professor of medical informatics at the University of Utah, which helped develop the 15-year-old system, said the IS department anticipated the requirements of the clinical departments early on.

"We made a decision to store data in a very structured format that's quickly retrievable," Gardner says.

Thanks to this decision and cur-

ning programming on the part of five full-time staff and 30 graduate students in Gardner's department, HELP can alert a physician, entering a request for medication, from any one of the terminals in the hospital, to harmful drug interactions.

Sacred Heart, Hillcrest and Latter Day Saints are at the crest of a wave that observers say has been late in coming. Very few hospitals have achieved integration stretching from the back-office administrative/billing system to the clinical computing resources used by nurses, physicians and ancillary departments and laboratories. Analysts agree that most of the 12,000 or so 300-plus-bed hospitals in the U.S. lag well behind their institutional counterparts in, say,

banking or finance.

Some hospitals, such as Grady Memorial, a 156-bed institution in Chickasha, Okla., only recently exchanged a time-share computing environment for an integrated in-house one.

When Grady decided in 1985 to replace its financial management system with an integrated administrative and clinical system, it chose Infostat, Inc. in Dallas, a Hewlett-Packard Co. value-added business partner.

Based on the HP 9000 Series 850, the Infostat system contains administrative modules such as patient admission-discharge-transfer (ADT), accounting and general ledger, as well as a patient care order-entry system. The order-entry component, installed this summer, lets an authorized user request tests or materials from a departmental terminal. Test orders are automatically logged to the patient record as charges, while material orders are logged automatically to a general ledger system.

Terminal fever

Of course, unless the hospital's front-line troops — physicians and nurses — use the order-entry/results reporting terminals, even the best integrated system won't be effective.



THE UNIVERSITY OF UTAH'S GARDNER co-developed a system that includes an expert system for alerting doctors to harmful drug interactions.

Making terminals more approachable has been a key element of most hospital integration projects.

By some estimates, 50% of all the information collected in a hospital happens at the bedside, making a strong argument for placing terminals there. In addition, a bedside terminal can quell the paper storm at the source. Instead of generating five or six paper files from a single action, such as a dressing change, a single

electronic entry could update the patient record, billing system and the inventory system simultaneously.

This is the hope of the IS department at Albany Medical Center in Albany, N.Y., where a bedside medical records system featuring a touch-screen interface has been under development at the hospital's Oncology/Hematology ward since August.

Mary McLaughlin, a registered nurse at Albany Medical and co-chair of its medical informatics group, reports that users have responded well to Protouch, a system from Second Foundation, Inc. in Burlington, Vt.

Protouch terminals, actually HP Vectra 286 personal computers with touch screens, connect to an HP 9000 minicomputer. Physicians and nurses build a command by selecting options from a highly structured menu interface.

Once created, the sentence is sent to the minicomputer, which itself is linked to other information systems using Lifeset, a protocol translation software system from Libera Health Technology in Dallas. Lifeset, which sits on an HP 9000 Model 825 reduced instruction set computer, re-formats the data and broadcasts it to other systems, such as a patient admissions database.

A distributed integration strategy using a local-area network also was the answer at Moses Cone Memorial Hospital in Greensboro, N.C. The

VITAL SIGNS

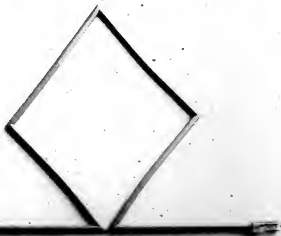
BOTH CENTRALIZED and distributed approaches to integrated hospital IS hit a stumbling block when it came to linking hundreds of stand-alone devices — from heart monitors to laboratory test equipment — that have moved into hospitals over the past 15 to 20 years.

Consider this: A nurse must check the digital readout from an automated blood-pressure gauge, enter the result on a paper record and then input the data back into a clinical information system, if one exists, from a terminal just outside the patient's room.

One remedy repeatedly mentioned by hospital information system executives is the Health Level 7 (HL-7) protocol, a 2-year-old communications standard derived from the seven-layer Open Systems Interconnect model. HL-7, which promises to integrate devices and applications as part of hospitalwide IS systems, currently addresses registration/ADT, order entry, patient billing, laboratory, pharmacy and radiology by providing a communication interface for exchanging information among each of these functions. Future specifications — Version 3.0 of the standard is expected next year — will include back-office applications, such as payroll/personnel and general ledger.

Progress on HL-7 has moved quickly, observers say, as vendors try to position themselves for what some expect will be a \$6 billion market for health care IS equipment and services by 1993.

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516-bed hospital has integrated pharmacy, radiology, laboratory and medical records systems from 14 vendors on a LAN product from Symborg Systems, Inc. in Greenbrae, Calif.

Such networks mean that the pharmacy need not re-enter all the demographic information on a patient — information that has already been collected and resides in the admissions system. Physicians from a terminal inside the hospital or from a PC can view test results by dialing into a server connected to the LAN.

The Moses Cone LAN was extended to a sister institution three miles away over a 64K bit/sec. T1 communications link to bring applications to the remote facility.

Extending these functions via a LAN was a fraction of the cost of installing a second information system, says Bob Pickton, vice-president of management systems at Moses Cone.

Pickton says the incentive for replacing a proprietary and centralized system was "purely economic," and that the Ethernet LAN-based system, which went into full operation last March after four years of construction, has helped him cut his operating cost in half and add functionality.

Pickton, who says the hospital has invested \$4.9 million in LAN equipment since 1981, says this approach is preferable to being saddled with an "inflexible centralized system. The biggest thing is that we can take advantage of the best applications for each department," he says.

Albany Medical and Moses Cone are instances of a distributed hospitalwide IS. According to industry observers, distributed IS is a hot topic in hospital circles because centralized systems, composed of modules for both clinical and administrative applications, can be a hard sell in institutions in which individual departments have already implemented autonomous IS solutions.

"These departments don't want to surrender what they have to the greater glory of a centralized system," says Frank Cavanaugh, a partner and national director of health care information systems at Coopers & Lybrand in Chicago.

When it comes down to a simple question of getting more bang for the



MOSES CONE'S PICKTON, shown here with monitor clerk *Laverne Gayden* (sitting) and *Jean Mahe*, head nurse of the heart unit, says the hospital's LAN-based system lets each department take advantage of the best applications for it.

buck, however, hospital information systems often fail the test.

Computer systems are routinely justified for the important, if nebulous, reason that they will "enhance the quality of patient care." Take the

blood patients.

But does a terminal make a nurse more productive?

Gardner at Latter Day Saints, for one, states that the amount and quality of the patient charting information "has gone up dramatically" with the terminals. But, he admits, "As best as we can tell, we haven't made nurses tremendously more productive."

Cultural issues also come into play. Albany Medical's McLaughlin says that while users have responded well to the results-reporting part of the Protouch terminals, "there has been resistance to the order-entry piece." She and others observe that, despite its advantages for capturing data at the source, using an electronic medium in place of the traditional paper medical chart necessitates a major shift in the way medical people are trained.

"There is a huge deficit between the information that is available and what is required" for decision making about the marketplace, according to Moses Cone's Pickton.

Once integration has been achieved, the next great step for hospital IS executives, observers say, will be to use the data collected by these enterprisewide systems for a strategic purpose of attracting consumers (read: patients) and managing their services in an increasingly competitive market.



alleged benefits of order-entry/results reporting terminals. Most analysts agree that there is a nursing shortage and that nurses spend perhaps 30% of their time attending paper records rather than flesh-and-

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MARK TWINE

LAN plans
a company
can grow on

By Aaron Brenner

Budgeting for a local-area network, even a small departmental LAN, is not as simple as multiplying a single price by the number of users. Instead, the purchase and installation of a local-area network requires intelligent and detailed planning.

When creating a LAN plan, it is easiest to break down the network into parts, calculate the organization's needs for each part and then combine the results to create an overall LAN plan. Because there are virtually hundreds of possible LAN parts, managers must prioritize those aspects of the LAN that have the greatest effect on its performance, ease of use and reliability.

Most managers, caught up in the technology aspects of networks, fail to realize that it is the application that is the most important consideration when planning a LAN. A network used primarily for electronic mail will have different requirements than a LAN used for heavy database transaction processing. Therefore, the LAN must be built to run the most rigorous application it will have to handle.

Determining the number of LAN users is a relatively simple calculation. However, many managers fail to take into account the type of users the LAN must accommodate. Data entry clerks processing orders will levy a far greater

tax upon network resources than executives performing occasional spreadsheet work and sending electronic mail. Therefore, the requirements of the network will differ not only with the number of users but also with the type of users.

The LAN's purpose will determine its other aspects as well. The type, topology and amount of cable will differ depending on the needed speed, capacity, reliability and flexibility. In small departmental networks, twisted-pair cable laid out in a daisy chain may be enough to carry the light traffic of printer-sharing applications. A factory environment will probably require fiber-optic cable to protect network traffic from electromagnetic interference and security leaks.

The same requirements hold true for the rest of the LAN's hardware. Today, file servers are usually Intel Corp. 80386-based machines with large amounts of disk capacity. This setup is appropriate for running new database server applications, but an Intel 80286-based machine with a disk coprocessor board may be more appropriate for heavy network disk

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CORNER OFFICE

Free from
the mainframe
mentality

By Vince Swayer

The other day, my friend Joe came up to me and said, "I noticed an article about your company downsizing from mainframes. Do you think many other companies are going to be doing this?"

"I am absolutely certain," I responded. Joe knows I was once a statistics professor and that I don't use certainty lightly. The truth is that I am quite sure most everyday mainframe applications will shift to smaller processors at some point. The truth also is that I'm not expecting the immediate demise of mainframes.

Technology improvements have enabled microcomputers to be used for major business applications. Technically, it is easy to see that microprocessors will be able to fulfill former mainframe parameters with their 32M-byte memories, banks of large on-line read/write optical laser disks, 500M-byte hard disks, 48-bit channels and the equivalent of 15 million instructions per second or more available soon.

The economic appeal of equipment costing one-tenth as much should also drive the migration to smaller systems.

Two characteristics of human nature tend to slow this movement, however. The first is resistance to change. People rationalize staying with the status quo by citing lack of

continued on page 46

A guide for zeroing in
on network essentials

The smart shopper has a detailed plan in place when going out to select the right LAN for an organization. He should take into account the following specifics:

- Application type.
- Number of users.
- Type of users.
- Cable requirements.
- File server.
- Peripheral needs.
- LAN software.
- Standards for applications.
- Needs of the installed hardware and software base.
- Future technology, new standards and organizational growth.

SOLUTIONS

Business before technology

By Stan Kolodziej

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THE SOLUTION

Restructure and streamline operations and staff using information technology.

"WE WANT to spend our time developing financial strategies, not databases," Gerry Chisholm says. As trustee and information systems director at Batterymarch Financial Management in Boston, Chisholm has made the company's business a priority for IS. In doing so, he has helped the financial services firm on its way to building a \$15 billion investment portfolio.

Chisholm describes his role as directing the technology to where it will earn the biggest payoff for his company. For Batterymarch, that direction lay in strategy development "because that's where our fundamental [business] data sits," Chisholm says.

Strategy development is key for Batterymarch because it allows the manipulation and forecasting of a company's financial strategy from a variety of scenarios. The ability to do this kind of forecasting using information technology provides data quickly and more precisely, he notes.

In arriving at its decision, Batterymarch and Chisholm took a different tack from competitors. Most companies use a five-step set of procedures

in their businesses: stock analysis, strategy development, stock trading, record keeping and portfolio management.

Instead, Batterymarch has made strategy development its first and foremost stage of business. Of next importance to the company is portfolio management—management and accounting. Only three steps, not five.

The second part of Batterymarch's plan is to pursue stocks that are considered unattractive by other investors and investment houses. By using computers to boost its strategy development area, the company hopes to find gold in these abandoned stocks.

To give it an edge and help support this restructuring and streamlining, Batterymarch relies heavily on its information systems plan.

Chisholm's plan is to standardize on technology but evolve with company needs to stay competitive. He wants to migrate the company's systems from Cobol, Pascal and Fortran to Unix-based workstations, the C program language and more relational database technology.

"We plan to redo everything in a new environment based on standards and a common language," Chisholm says.

The company subscribes to at least 11 different database services, and each analyst has two computer terminals on his desk to handle decision support and what-if and stock analyses.

Chisholm claims that one of the strengths of Batterymarch's computerized portfolio management is the

close integration of programs in all three operations areas.

"The system could be tracking a stock, perhaps running an audit trail and another program, perhaps handling exception reporting, and find something unusual, such as recurring price fluctuations of that stock dur-



CHISHOLM's plan is one of standards and a common language.

ing specific periods of the fiscal year," Chisholm explains. The system then flags Batterymarch analysts, who can go out and explore this potential business opportunity.

The strategy has paid off in a big way. Today, Batterymarch handles an investment portfolio of \$15 billion with only 50 employees, a significantly smaller number of employees than most other investment houses use for such business. Normally, an organization like this would employ 200 to 300 people, Chisholm says. The information system has "allowed us not to grow in people," adding that computers "like to work weekends."

Chisholm wants Batterymarch to remain a fairly small company, and he says standards and the strategic pairing of company priorities with information systems will keep staff numbers low.

"As soon as you get to be a large company, there are more divisions and organizations to look after. It gets messy," Chisholm says. "That's what we want to avoid."

KOLODZIEJ is a freelance writer based in Lexington, Mass.

IS chief Chisholm describes his role as directing the technology to where it will earn the biggest payoff for Batterymarch.

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CLIPS



from HARVARD BUSINESS REVIEW

September-October 1989

Manufacturing is moving toward the ultimate just-in-time (JIT) factory, in which the output of all the local JIT cells is coordinated and matched to customers' demands. To this end, factories are implementing expert systems to troubleshoot and diagnose problems and shop floor management systems that monitor manufacturing and collect production data as well as merge with technologies such as smart cards and bar coding.

From "Getting control of just-in-time" by Uday Karmarkar.

from SLOAN MANAGEMENT REVIEW

Summer 1989

Leaders' dissatisfaction with the status quo is not enough to change it. What they need to do is diffuse this dissatisfaction throughout the organization, because it will be employees who will actually institute new ways of thinking and acting. If leaders overlook this diffusion step, they

may fail to generate any real commitment to change; employees will greet new organizational and behavioral models with resistance or, at best, half-hearted compliance.

From "From bogged down to fired up: Inspiring organizational change" by Bert Spector

from SCIENTIFIC AMERICAN

October 1989

For the U.S. to restore its technological lead, it must follow six steps: scan the globe for new technologies, link government research and development funding to commercial products, integrate corporate R&D with production, manage the establishment of technological standards, invest in the technological education of workers and provide good basic education to all citizens.

From "The quiet path to technological preeminence" by Robert Reich.

from HARVARD BUSINESS REVIEW

July-August 1989

Outstanding general managers stress the fundamentals. They develop a distinctive work environment through high-performance standards, strong business concepts and clearly defined people concepts; they spearhead innovative strategic thinking; they manage company resources productively; they direct the development and deployment of people; they build a dynamic organization; and they oversee day-to-day operations.

From "Six basics for general managers" by Andrall Pearson.

from UNIVERSITY OF CHICAGO SCHOOL OF BUSINESS

Selected paper No. 65

The continual improvement of a business' processes — finance, marketing, purchasing, accounting, engi-

neering and research and development — improves quality and productivity. Poor quality costs; it disenchants customers and hurts future sales. Further, there is the cost of reworking, an activity that would have been unnecessary if the job had been done right the first time. If workers are encouraged to aim at continual process improvement, they achieve better quality as a by-product of their normal duties.

From "Quality and productivity: Implications for management" by Harry V. Roberts.

from THE WHARTON SCHOOL

Working paper

Whistle-blowing involves one party accusing another of a breach of ethical or legal duty. By setting up an internal whistle-blowing system, a firm can lessen the loss of reputation and money associated with employees going public with information as well as gain insight into employee attitudes and business operations. Such systems can consist of ethics hot lines, corporate ombudsmen, ethics committees and corporate law or human resource departments that respond to complaints and warnings.

From "Corporate policy and whistle-blowing" by Thomas Danfer.

from TECHNOLOGY REVIEW

October 1989

Telebombs combine the advantages of human remote control with the autonomy of industrial robots. A human supervisor states an objective. The telebomb then makes decisions and acts based on an on-board computer as well as signals from its own sensors. These machines are already in use by oil companies to maintain offshore structures and pipelines; experimental uses include repairing nuclear reactors, disposing of bombs safely and assisting the handicapped.

From "Merging mind and machine" by Thomas Sheridan.

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— John Tutunian
Chairman
Cornell Computer Corp.

Cornell Computer Corp., based in Long Island, N.Y., with 15 offices in the East, West and Southwest, provides consultant services to the nation's MIS departments. The company also specializes in training seminars and courses and software maintenance on a 24-hours-a-day basis.

But Cornell considers the quality of its consultants to be the company's greatest asset, says Chairman John Tutunian. That's why, he notes, when it comes to recruiting consultants, Cornell turns to *Computerworld's* Computer Careers pages.

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CROSS SECTION

How important is it that a single vendor deliver a multivendor integration solution?

We asked that question of IS professionals around the country. Respondents seem to think the idea of a one-stop integration shop is a good one, but when it comes right down to it, they prefer to use in-house resources to control quality and costs.

"I don't think it's necessary to go with one vendor. We rely on in-house expertise. Besides being able to control quality, you get price breaks using your own people rather than hiring from outside."

**BOB WALLACE,
MANAGER OF MIS,
CENTINITY
CLAREMONT, CALIF.**

"I think having a single vendor handling multi-vendor ties is a good idea in terms of service and accountability."

**TIMOTHY KAHN,
MANAGER OF MIS,
SONOCO PAPER
DUKE, N.C.**

MARITTA, GA.

"I wouldn't turn to a single vendor first. I'd look at internal staffing to handle the project. But if it's such a large project that you wouldn't have enough staff resources or enough time, I'd probably go with a third-party independent vendor."

**CHARLES J. LASKY,
DIRECTOR OF MIS,
DOW-QUINCY INC.
HALLFORD, CONN.**

"We've been handling integrating our systems in-house. It would be desirable to go to one place for an all-encompassing solution, but we'll never see that. There have been attempts at providing an open architecture, but there really is no Esperanto."

**DAVID PHILLIPS,
DIRECTOR OF MIS,
FULLER CO.
BETHLEHEM, PA.**

"For our level of complexity — we've got DEC VAXs and IBM System/38s tied into an IBM 3090, not to mention LANs — I don't think we could get the type of support we need from one vendor."

**RONALD RHEM,
MANAGER OF
INFORMATION
TECHNOLOGY/
SERVICES,
SCOTT PAPER CO.
MARIETTA, WIS.**

"We would like a single vendor to take responsibility to handle our multivendor integration. Multivendor integration can, at times, be too complex to be handled by a host of computer vendors."

**JOHN F. INESON,
DIRECTOR OF
CORPORATE IS,
UNION CAMP CORP.
WAYNE, N.J.**

LAN PLANS

Continued from page 41
and file sharing. Processing requirements at the workstation will also differ from application to application.

Managers should also think about their applications when considering LAN operating system software and protocols. Standardization is making this less of a worry, but some network software facilitates transaction-intensive applications better than others. More obviously, some network software packages do not support the protocols needed for the latest network applications.

In general, an intelligent plan that always keeps the network's purpose in mind will enable a departmental LAN installed today to become an organizationwide LAN tomorrow.

BEHNER is a free-lance writer based in New York and author of the book OS/2 LANs.

MAINFRAME MENTALITY

Continued from page 41
staff and cost of conversion.

The other human nature characteristic is the desire to preserve one's job. Those who are self-assured will look to micros as an opportunity to advance with the technology and will maintain their status by being at the forefront of the change. Others will hold to the mainframe mind-set and do all they can to prolong the need for large hardware.

Behind all of this is the often forgotten idea that what should happen in the long run is what is best for the business; competition eventually dictates lower cost solutions.

Within five years, smaller, less expensive equipment will support most mainframe applications developed five or more years ago. The notion of sharing one high-price mainframe for many applications will be altered by the efficiency and low cost of using

many small processors oriented toward individual applications.

Furthermore, software technology makes use of the growing memory size of micros to produce powerful, easy-to-use systems, reducing the need for computing professionals.

Economics and end-user pressures will move most traditional mainframe applications to microcomputers. Mainframe requirements will remain, however, supporting processes that are still too large for application-oriented small processors.

That's the train of thought behind my quick response to Joe. Eventually, he will probably have me clarify my position for him. In the meantime, my advice is to give some thought to the everyday mainframe applications that will run on the newest microcomputers.

SWANER is vice-president of corporate systems at Sara Lee Corp. in Chicago.

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Computersworld Focus on Integration 4

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President/Finance

November 6, 1989

Contemporary Focus on Integration 47

conclusions

FROM THE DIEBOLD RESEARCH PROGRAM
THE DIEBOLD GROUP, INC.
NEW YORK

Information technology's expanded role creates new imperatives for information systems management. These executives must respond to the increased demand for integration of systems, networks, data, functions and processes; they must use information technology to achieve strategic goals; they will have to apply a new mix of human resource capabilities

to IS management and support; and they will have to integrate strategic technology planning into the

Indicators

business planning process.

FROM "USER WANTS AND NEEDS, SCIENTIFIC/ENGINEERING WORKSTATION SERVICES"
THE LEDGEWAY GROUP, INC.
LEXINGTON, MASS.

More than 600 IS managers identified the integration of multivendor scientific and engineering workstations as the greatest service issue they face.

FROM "STRATEGIC ISSUES - 1989"
THE SIERRA GROUP
TEMPE, ARIZ.

In a survey of 835 IS directors, The Sierra Group found integration, interconnectivity, shared resources, interoperability and ease of use to be issues of strategic importance. Computing in the '90s will entail integration at the applications level of heterogeneous systems, facilitated by a common user interface in a multitasking, windowed environment.

FROM "PLANTWIDE SYSTEMS INTEGRATION"
AUTOMATION RESEARCH CORP.
MOUNTAIN VIEW, CALIF.

The top 10 systems integrators in the plant automation business (revenues in millions):

- Andersen Consulting (\$175).
- Electronic Data Systems Corp. (\$130).
- Coopers & Lybrand (\$60).
- Bechtel National, Inc. (\$60).
- Fluor Daniel (\$58.5).
- Computer Task Group, Inc. (\$45.5).
- Arthur Young (\$35).
- Ernst & Young (\$33).
- Harnischfeger Engineers, Inc. (\$25).
- Cincinnati Milacron (\$24.5).

BUILDING A STRATEGIC OUTLOOK By Terry G. Goodbody

Why can't one person do the job that requires dozens today? It seems like only yesterday I could walk out of my office and grab someone, tell him what I wanted and in no time he would build a neat little program that did everything.

Information systems people today are all specialized in an area of expertise; our industry is becoming like the construction industry!

If this analogy really got going, the programmer/analyst would want to be called an architect and communications people would want blueprints of the site. I would have to hire quality assurance folks (building inspectors) to make sure programs work like the specs say they should. Worse yet, project managers would want to plan projects instead of coding programs.

As a matter of fact, the IS industry already has something in common with the construction industry — they both seem to miss completion dates no matter how strategic the plan.

In taking an architectural approach to creating a strategic IS plan, I would have to equate data to land and the architect to the programmer like an architect with land, programmers work with data. There would be blueprints of how electricity, water and gas would run over the land, which is what IS does with communications.

Hey, wait a minute. This way of thinking does start to add a little order and strategic direction to the way I think about things. First, I need to survey the land (data) and lay out the electric, water and gas (communications). Then I can tell the architect (programmer) just how and what to build. I guess I would then have a strategy for information planning and, just maybe, I could get all those specialists to talk to each other long enough to get me a neat little program, just like I used to get.

GOODBODY is director of information services at The Orange County Register, a newspaper in Santa Ana, Calif.



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